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RECENT EXCAVATIONS AT THE EDWIN HARNESS MOUND, LIBERTY WORKS, ROSS COUNTY, OHIO

N'OMI GREBER

with James B. Griffin, Tristine Lee Smart, Richard I. Ford, Orrin C. Shane III, Raymond S. Baby, Suzanne M. Langlois, Stephanie J. Belovich, David R. Morse, Kent D. Vickery

Abstract

Analyses of data recovered during the 1976–1977 excavations at the remnant of the Edwin Harness Mound, a major Hopewell site in Ross County, Ohio, are presented, with some reanalysis of data from earlier (1840–1905) excavations. A large structure has been identified at the base of the mound. Botanical, faunal, and soil analyses indicate that the physical environment in the central Scioto Valley near A.D. 300, when the building was in use, was similar to that found in the area in the late eighteenth century. Detailed studies of ceramics, lithics, and human skeletal remains are presented. The varied activities which took place within and near the major structure, and implications for interpretations of materials from Seip (Pricer) Mound on Paint Creek, are discussed.

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ACKNOWLEDGMENTS

It was exciting and somewhat unbelievable in November 1975 to see clear evidence that sections of a major Hopewell mound were still unexcavated after 130 years of intermittent digging. This was my first look at a very level Edwin Harness Mound. Many people shared the effort and work, which have resulted in significant new information from this classic site. The work was made possible by Robert Harness, who not only gave us permission to excavate on his land, but also helped in many practical matters. These ranged from letting me use the top of his tractor as a photography tower in November 1975 to backfilling over many refilled and cemented post holes after the 1977 field season. He and his wife, Marilyn, were most hospitable to their many digging guests.

The first season of field work was under the auspices of the Ohio Archaeological Council, whose president, David Brose, and vice-president, Orrin Shane, were instrumental in initiating the support of the council and in encouraging me to work at the site. In the field there was a permanent staff of three—Wesley Clarke, Michael Hambacher, and myself—and a total of 120 volunteers who worked at the site for various lengths of time from June 7 to August 14, 1976. Funding for this season was provided in part by a matching grant to the council from the Ohio American Revolution Bicentennial Advisory Commission. The match for this grant was more than met with the donations received by the council from Ohio corporations and private sources. At the end of this season, when it became evident that there was more detail intact than could possibly be completed within the original time limit, Mr. Harness agreed that I could seek funds for a second season.

Major funding for this second season, which was under the auspices of the Cleveland Museum of Natural History, came from the National Science Foundation. Field school students worked with a core crew of experienced first season veterans, making a combined total of 43 crew members for the second season. Wesley Clarke was my chief assistant. Franco Ruffini joined the supervisory staff with special responsibilities for overseeing students. Michael Hambacker did what might seem impossible by maintaining an excellent, much needed, and often used photo record of our work while still demonstrating his exemplary field techniques. The second season began June 14 and ended August 26, 1977.

Both summers, Alva McGraw gave us the use of one of his farmhouses as well as help with innumerable practical problems and invaluable moral support. We, as all archaeologists in Ross County, give him special thanks.

The curation and analysis began in the field in 1976. Many hours were spent "after hours" cataloguing, cleaning, water screening, etc. Jane Busch was the chief field cataloguer in 1976; Shaune Skinner in 1977. The work continued in the winter of 1976–1977 at the museum with Dennis Griffin. In the fall and winter of 1977–1978 Eloise Gadus supervised the laboratory curation and was a general research assistant. Museum volunteers and students from Cuyahoga Community College, Case Western Reserve University, and Cleveland State University worked on various laboratory connected projects. The results of specialized analyses presented herein were performed at the respective laboratories of the various consultants noted in the chapter headings. Even with excellent support from public foundations and with private donations of funds and services, choices had to be made concerning which samples would be analyzed first, which would wait. Those samples awaiting analysis are stored and ready for new resources, new analytic techniques, and new ideas.

The integration of information from earlier excavations was an essential part of our work. Martha Otto and Bradley Baker of the Ohio Historical Society and Stephen Williams and Sally Bond of the Peabody Museum, Harvard University, were, as always, gracious and helpful in allowing access to their collections and documents.

The maps and drawings of the field data were prepared for the present report with patience and skill by Mark Schornak. The chapters without author designations were written by myself.

Although I have personally gained knowledge from each archaeological excavation in which I have participated and know that each site represents a unique and irreplaceable piece of prehistory or history, Edwin Harness is a special place for me. To each and every one who shared the planning, excavation, curation, and analysis I give personal and professional thanks. Without your help we would still only be able to speculate on the existence of the Harness Big House.

N'omi Greber

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1 INTRODUCTION

The following site report on the 1976–1977 salvage excavations of the remnant of the Edwin Harness Mound, Ross County, Ohio contains types of data which could not have been included in the reports of earlier expeditions. Technology has grown rapidly since 1907 when the last report was published. The application of these new analytic techniques was one of the major purposes of our excavations. (Figs. 1.1, 1.2). A second major purpose was to salvage data on the manner in which space had been used by the inhabitants of the site before the mound had been constructed. This data had not been available before, partly because of the checkered series of excavations and the missing field records from major sections of these excavations. These earlier excavations at Harness and other major sites in southern Ohio established that different cultures were represented among the "mound builders." Edwin Harness was assigned to Hopewell on the basis of artifact similarities (Mills 1907:191). These artifacts do show the high artistic and technical talents of the individuals who made them, and we still restudy them because they are part of the basic data which allow new ideas to be developed and refined. Less exotic, perhaps, but equally important to this data base is the context in which these objects were found. Fortunately some of the gaps in the knowledge of the contexts at Edwin Harness can now be filled in, both with newly found old records (e.g., Murphy 1978) and with new field data (Fig. 1.3).

The emphasis of the most recent field work at the site of the Edwin Harness Mound was context; the following chapters report on the data we found and on the specialized studies of that data which have been completed to date. The design and construction of a major Hopewell civic-ceremonial building, parts of its contents, and the mound that covered it are described. We also now have specific data on environment, subsistence, and chronology from this classic site.

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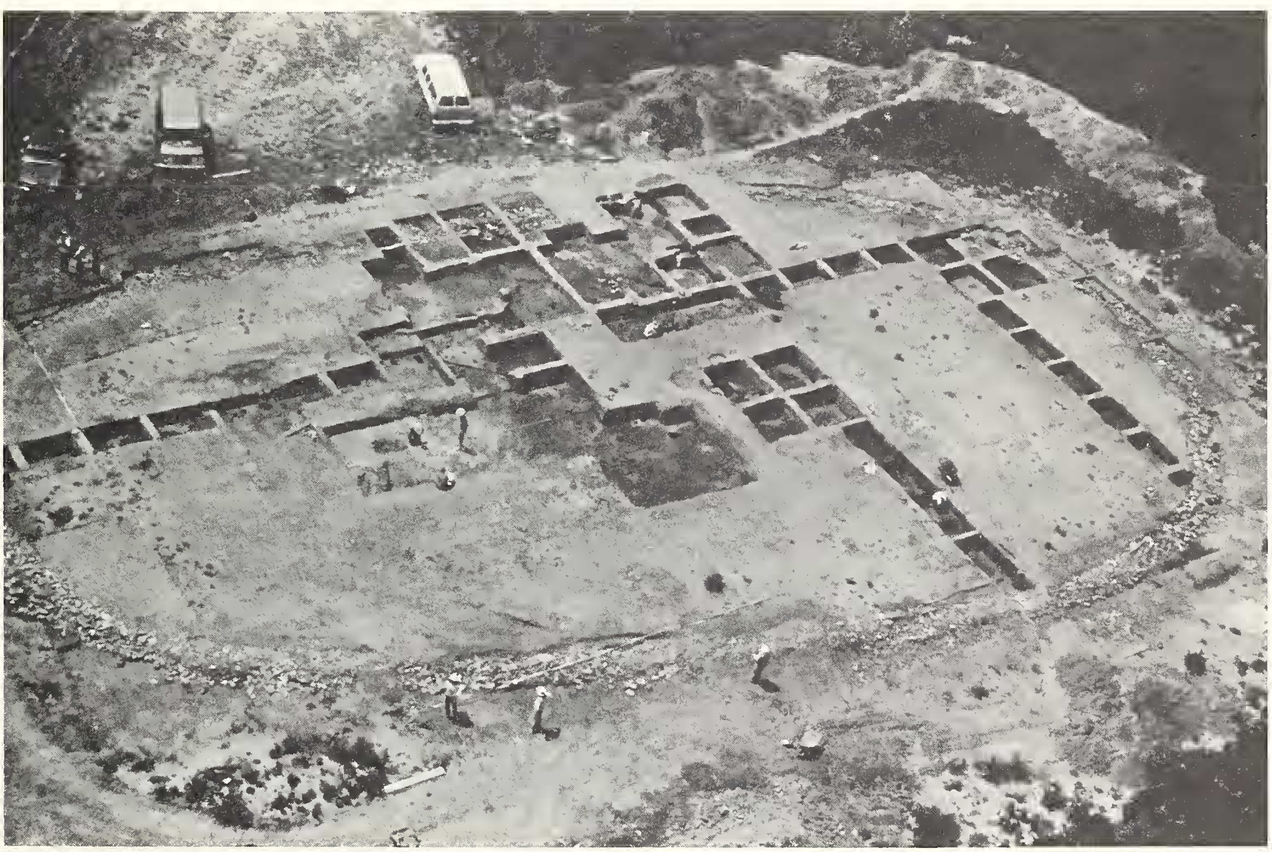


Fig. 1.1. General view of excavations, 12 August 1976. The remains of the heavy gravel wall (Feature 1) ringed secondary mound fill and defined the major activity floor. View looking west.

Fig. 1.2. General view of excavations, 21 July 1977. View looking south.

Fig. 1.3. Base of heavy gravel wall (Feature 1), west side. Unit N537.5 E485, 28 July 1976.

2 THE EXCAVATIONS

Previous Excavations

The Edwin Harness Mound (lat. 39° 15'.4N, long. 82° 52'.6W) was the largest of the 14 mounds associated with the Liberty Earthworks, Ross County, Ohio (Fig. 2.1). Excavations of this mound, as for many of the large classic Hopewell mounds in Ohio, began in the early part of the nineteenth century and have continued intermittently to the present. The results of the first two test shafts in the mound were reported by Squier and Davis in 1848. Subsequent digging was done by local schoolboys; by Frederick W. Putnam (1885) of the Peabody Museum, Harvard; by Warren K. Moorehead (1897) and William C. Mills (1907, 1903) of the Ohio Historical Society. Mills quotes in some detail from the reports on earlier excavations and from Putnam's account of the materials found by the schoolboys. One of the pits dug to the floor of the mound by the boys was next to Squier and Davis's Pit B. This pit, which has been recorded by all the excavators except Moorehead who worked only at the south end of the mound, has provided one of the major reference points for integrating data obtained over a 130 year time span (see Table 2.1:Fea. 24).

Putnam began his trench on the north end, inside the heavy cobbles which ringed the mound, and gradually cut down towards the floor. He widened the trench when he reached the first charred areas (Greber 1979:Fig. 6.4). Moorehead continued south from the end of Putnam's trench. He did not dig from the surface to the floor but used tunneling techniques to reach the south end of the mound (ibid.). Mills began at both the south and southeast edges of the mound in his first season. He spent 12 days in 1903 digging to and through the floor of the mound to the approximate end of Moorehead's tunnels. When he returned in 1905, he began on the northeast side of the mound east of Putnam's trench and finished on the west side of this trench. The relatively intact main floor extending east-west near the N525 line and the similarly relatively extensive remains on the west side of the structure are in areas uncovered, if at all, at the end of each of Mills's two expeditions.

Squier and Davis describe the mound as egg shaped in plan, with the larger end at the north. The height of the mound varied from approximately 20 ft (6 m) in the north

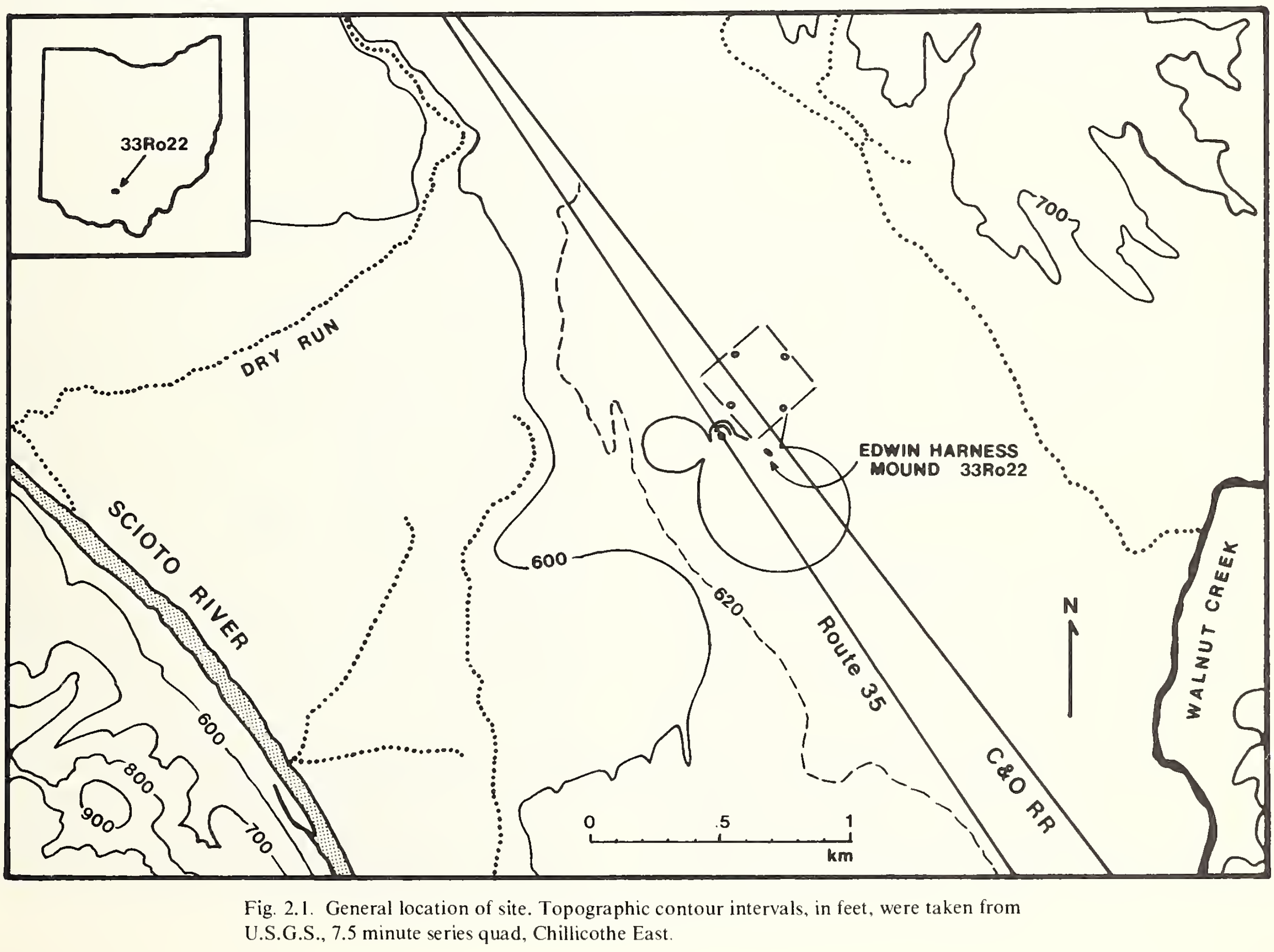


Fig. 2.1. General location of site. Topographic contour intervals, in feet, were taken from U.S.G.S., 7.5 minute series quad, Chillicothe East.

TABLE 2.1
Summary of Features

- Major mound stratum: 1, 41
- Local mound stratum: 20, 21, 43
- Floor stratum: 3, 3C, 33, 50, 65
- Local floor stratum: 3B, 72, possibly 39, 96
- Main activity floor
  - South Section
    - Shallow burned area: 82B, 92
    - Disturbed grave: 70, 82A; immediately west, 71
  - Middle Section
    - Shallow burned area: 47
    - Disturbed grave: 83, 84
    - Heavily burned area: 36
    - Pit: 19, 30, 79, 89
  - North Section
    - Shallow burned area: 34, 78; immediately west, 32
    - Disturbed grave: 27, probably 28, 29; all immediately west
    - Burned log: 26, 35
    - Probably heavily burned prepared clay basin: 18
    - Pit: 91
  - Prepared basin: 62
  - Depression: 54
  - Log mold: 48
  - Pit: 17
  - Post Hole: 11, 13, 14, 38, 40, 42, 64, 66, 67, 87
  - Small trench with stake holes: 59, 85, 88, also in 22
  - Shallow burned area or deposit of burned materials: 6–10, 12, 16, 31, 44–47, 49, 51–53, 76
- Historic pit in main floor: 24, 25, 77, 93, 94, 95, probably 58, 86, 90
- In prior backfill
  - Bone concentration: 2, 4, 5, 23, 61, 74, 75
  - Log: 15
- Below main activity floor
  - Shallow deposit of burned materials
    - On Feature 65: 54A, 97
    - On Feature 50: 57, 73
- Associated with outer areas
  - Burial: 56, 60
  - Major stratum: 69, 69A
    - Deposit within 69: 68, 80, 81
    - Deposit within 69A: 55
  - Pit: 63
  - Tap Root: 37

to approximately 11 ft (3.3 m) at the southern end. Mills reported the maximum height at the north as slightly less (16.75 ft, or 5.1 m). The recorded decrease is likely due to Putnam's cut through the crest of the mound and some erosion. The site was backfilled after Mills's more exhaustive excavations to approximately 5 ft (1.5 m) in height. Based on photographs and descriptions of Mills's work and on our recent excavations, it seems likely that the backdirt was deposited behind the excavators as they worked section by section. The outer boundary of the mound described by all work prior to 1977 was the heavy cobble and bedded stone mantle shown in Squier and Davis's estimated cross section (1848:Fig. 6f). Major portions, if not essentially all, of the lower sections of this wall were left intact until heavy power equipment was used in 1975 to level the remnant of the mound and the backfilled excavations to the general ground level. Data from previous work, though varied in their documentation, have been integrated into the already completed reports on special aspects of the research goals (Greber 1979; Gadus 1979; Greber, Davis, and DuFresne 1981; Bender, Baerreis, and Steventon 1981) and into the present site report.

Field Methods 1976–1977

During the 1976 season, the remains of the very bottom of the outer stone wall (Feature 1) which had surrounded the mound were defined. Hand excavated trench units were concentrated in the least disturbed sections of the site on the west and in the north in order to obtain undisturbed prehistoric ecofacts and as much stratigraphic information as possible. These units were taken down through all cultural deposits into the underlying natural soils. Two large areas in the central portion of the site were cleared using power equipment (Fig. 2.2). During the second season, additional hand excavated trench units were placed on the east and in the south, again to give stratigraphic information, particularly as a guide in using power equipment. Backhoe trenches were dug to aid in determining the horizontal extent of the floor strata (Features 3, 3B, 3C, 33, 39, 50, and 65) and mound strata (Features 41, 69, and 69A) found both by the hand excavations and the first backhoe trenches. These trenches were numbered as they were dug. After the hand excavation trench units were completed, the interior of the site (within Feature 1) was cleared by the backhoe so that the building patterns and also the activities on the remaining floor outside the building but within the stone wall could be defined by final hand clearing (Fig. 2.3). At the request of Mr. Harness the stones of this wall were removed and kept separate from the other backdirt, thus simplifying future farming of the land. Mr. Harness himself very kindly did the backfilling. A 2.5 m unit which contained original mound strata just within this wall was left unexcavated, and it is hoped that sections of this will remain below the depths reached by farming equipment.

At first, all excavated soils were dry screened through ¼ in. mesh. As it became apparent that the mound loadings at the remaining mound levels were culturally sterile and that archaeological redeposited materials were of secondary importance, general dry screening was discontinued. When significant deposits of prehistoric materials were found in the archaeological backfill, soils were dry screened. Flotation samples were taken from undisturbed areas of features and post holes as well as systematically from mound loadings in each excavation unit. All the remaining excavated soils from features and post holes were

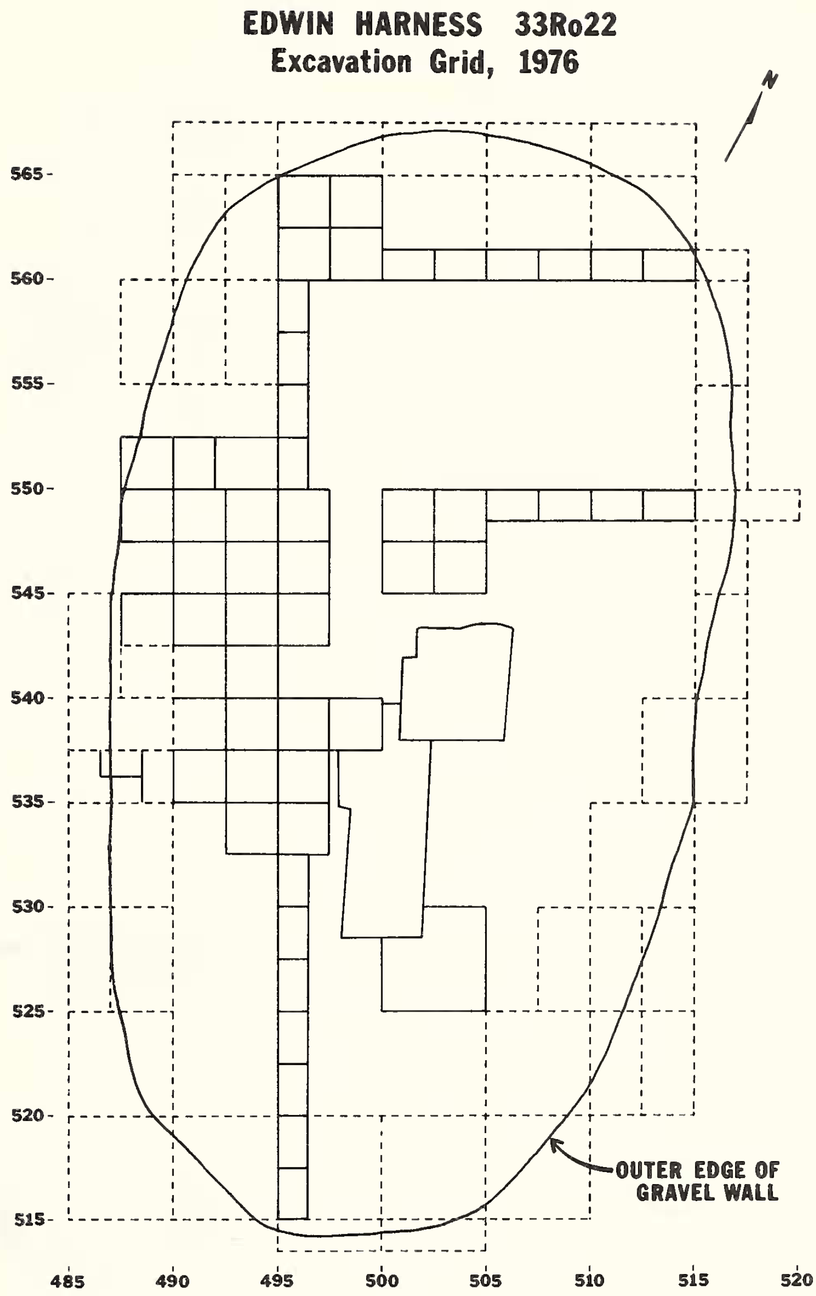


Fig. 2.2. The Excavation grid was set along the major axis of the mound. Grid north is 30° west of magnetic north (1976). The units indicated by dotted lines were excavated to the base of the gravel wall. Grid point N540 E485 is at 624 ft (190 m) elevation and at the Ohio Plane System Coordinate (1,893,234; 457,750).

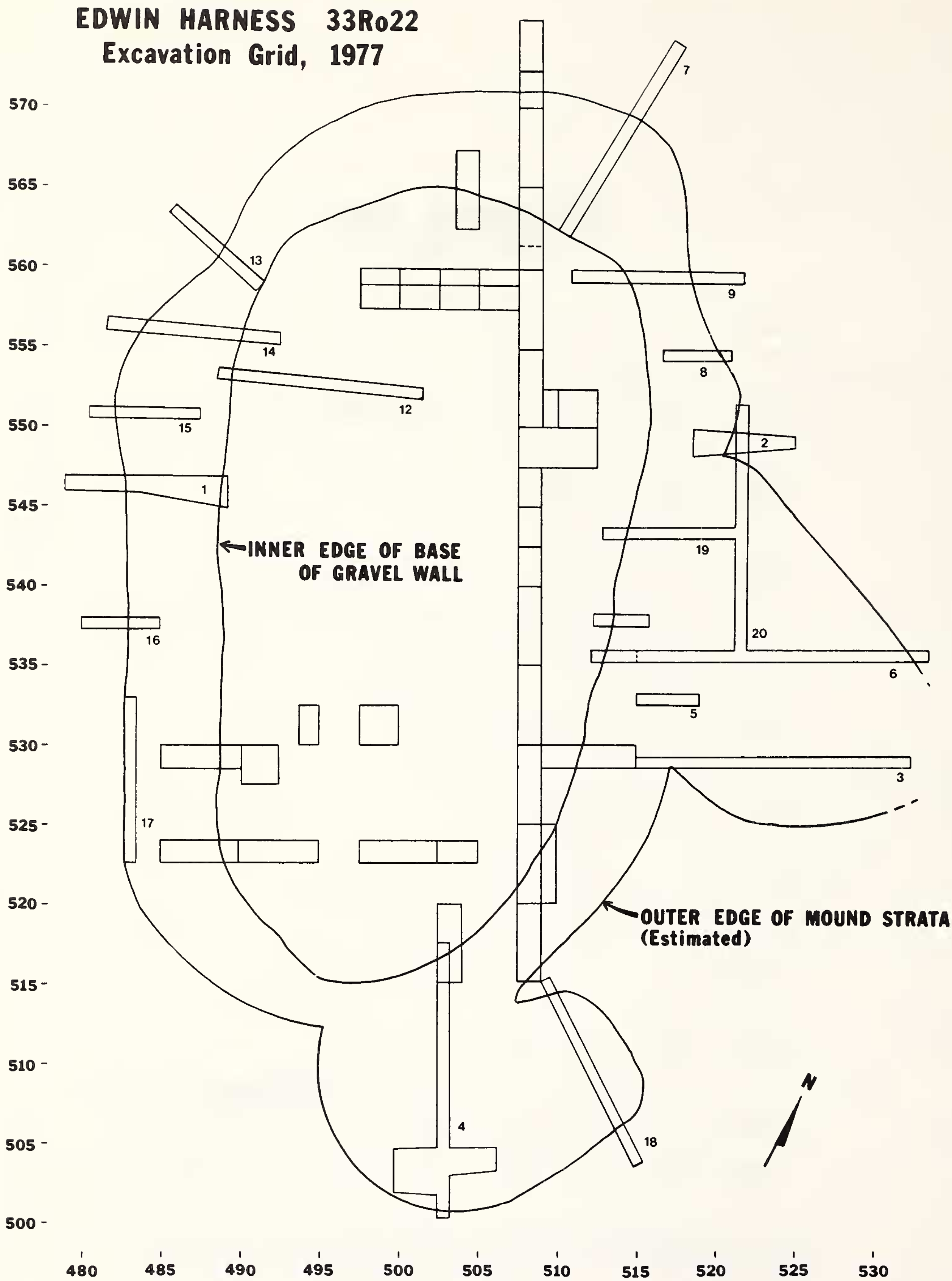


Fig. 2.3. Trench units excavated by the backhoe are numbered in sequence as dug. After completion of the hand excavated trench units, the area within the gravel wall was excavated by a combination of backhoe and hand clearing (see chap. 2 and Fig. 2.2). Magnetic north as of 1976 indicated.

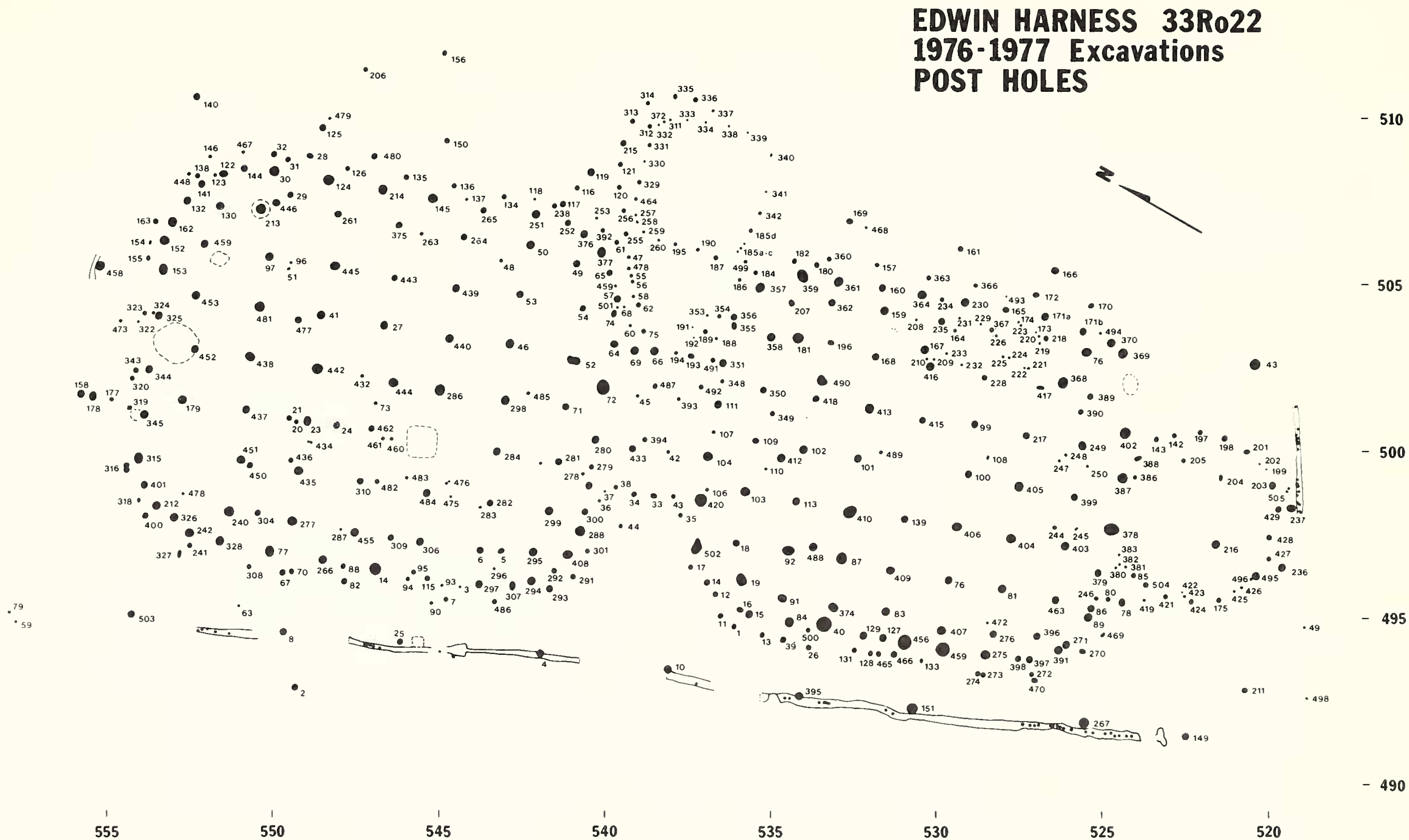
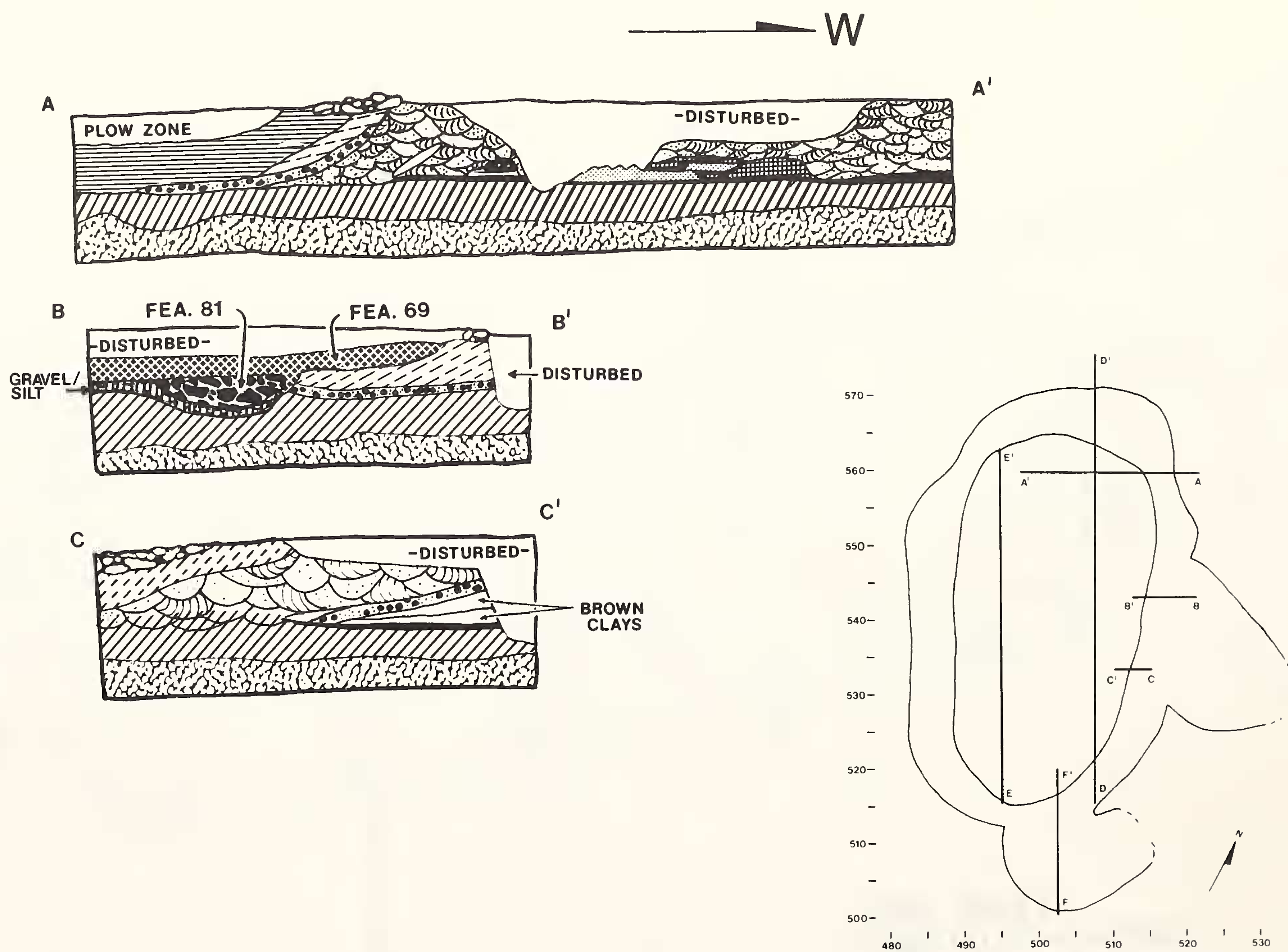


Fig. 2.4. Post holes as first found. Some variations in elevations due to prior excavation (see chaps. 2 and 3).


W
A
A'
PLOW ZONE
-DISTURBED-
B
B'
FEA. 81
FEA. 69
-DISTURBED-
GRAVEL/ SILT
DISTURBED
C
C'
-DISTURBED-
BROWN CLAYS
570
560
550
540
530
520
510
500
480
490
500
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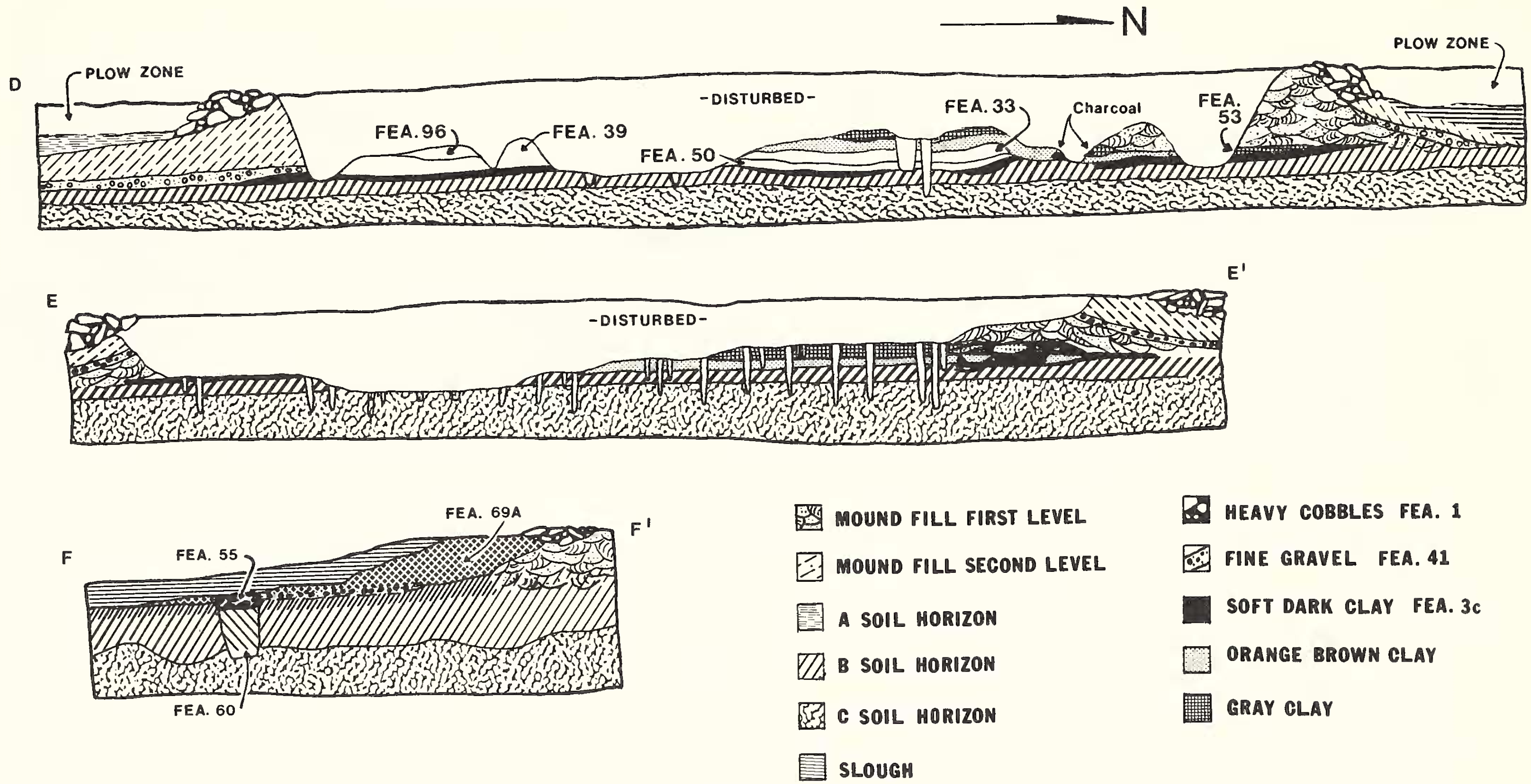

Fig. 2.5. Sketches of site profiles. Vertical scale exaggerated for clarity. The directions indicated on profile sections are grid W and grid N. Magnetic north (1976) is indicated on the location key. Section EE′ illustrates composite section through Big House; details discussed in chap. 3.

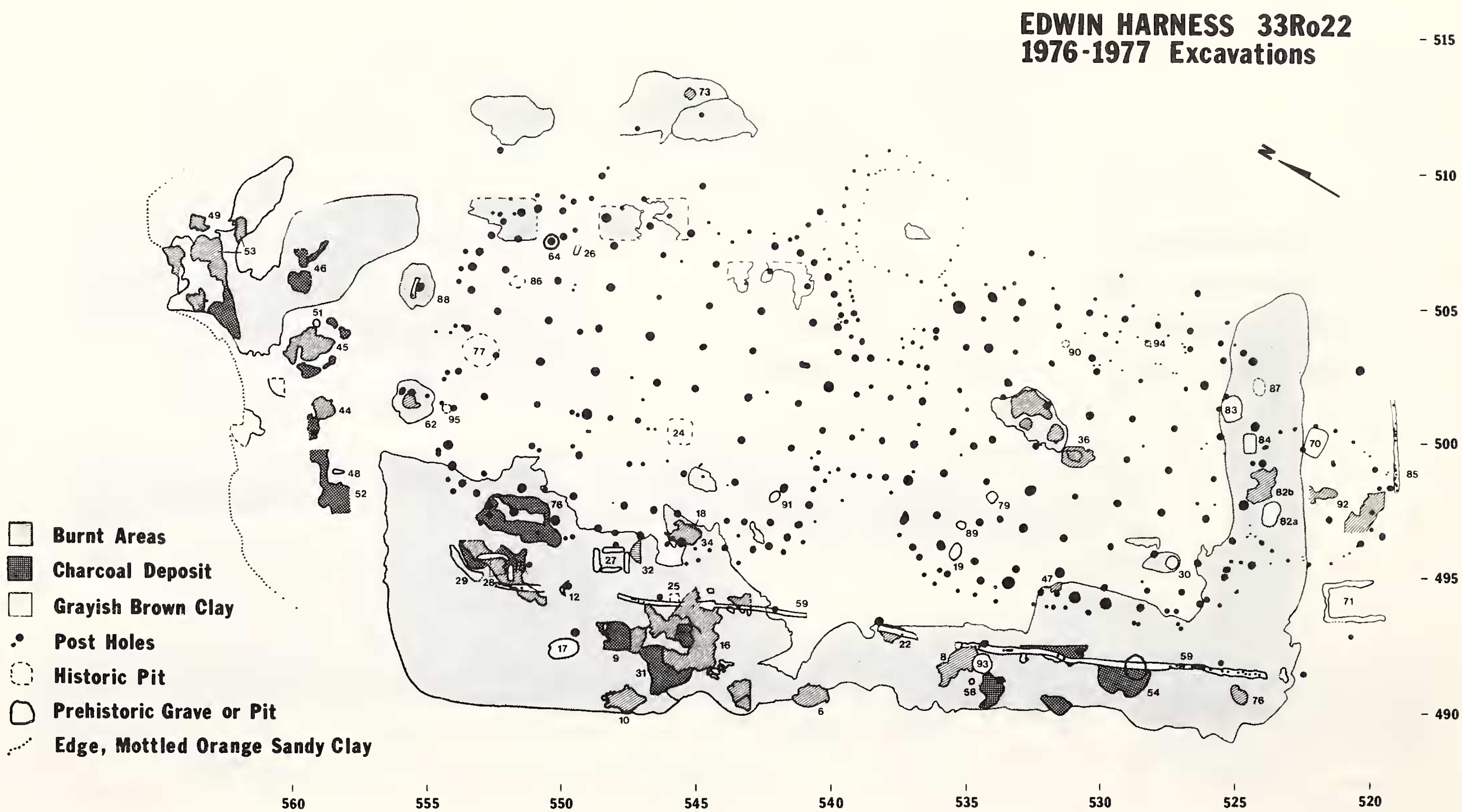

Fig. 2.6. Remains of major activity floor and other features found at base of mound. See chap. 3 for explanation of elevation depths represented. Magnetic north as of 1976 is indicated.

water screened through fiberglass window screening. The flotation equipment, which was constructed by museum personnel, was basically that described by Patty Jo Watson (1976). Screens of 4 mm, 2 mm, and 500 μm were used. Flotation was done at the Scioto River about 8 km from the site. Water screening was done largely at the field station.

One hundred two features were recovered. These fell into several categories, which are tabulated in Table 2.1 and discussed in more detail in later sections.

Post holes were tabulated separately from features. Occasionally a disturbed post hole was first recorded as a feature and then given a post hole number when it was later excavated and identified (Fig. 2.4). Once the prehistoric loadings or historic backfills were removed, the structural post holes were readily identified. The subsurface depths at which these holes were identified varied. There was a downward slope built into the prehistoric floor from the center towards the outside. However, the major factor affecting the identification depth was the degree of historic disturbance (Fig. 2.5). With very few exceptions (e.g., Fig. 2.6: Feature 87) all major building posts had been set deep enough to be identifiable below extensive disturbances which were mainly due to Mills's excavations. Smaller, more shallowly set stakes, which may have been placed in sections of the building floor previously excavated by Mills, could not, of course, be found.

Since the 1976–1977 excavations were salvaging information from a severely disturbed site, samples for ecological data had to be taken from a "what's left" universe. All samples for soils and pollen analyses were taken only from within an archaeologically undisturbed context. Within this restriction every attempt was made to take samples which represented the horizontal and vertical extent of the site as well as the various types of features (i.e., mound strata, floor areas, pits, etc.). During the 1976 season, two sets of pollen samples were taken. A set of 12 one-inch core samples were taken from within the undisturbed mound loadings and directly under Feature 1 (the outer stone wall). Also, four columns which had square cross-sections, 6 cm on each side, were cut through the mound loadings and building floor strata down into the natural subsoils. These columns were wrapped in plaster soaked cloths for shipment to Linda Shane at the Pollen Laboratory, University of Minnesota. It was hoped that uncontaminated pollen might be found by taking samples from these columns under controlled laboratory conditions. No pollen was found in any of the samples analyzed. Broken and fragmentary phytoliths were found in samples from the building floor; however, it could not be determined whether these were of ancient origin within the clays used to construct the floor or whether they were associated with flora blown or carried into the building during the time the floor was in use.

During the second season, Dr. Shane came to the site to collect samples which were to receive preliminary processing immediately at facilities of Ohio University in Chillicothe. She determined that the best chance for finding intact pollen was on the under side of large in situ pieces of charred wood. Unfortunately, once again, no pollen was found.

Soil samples for simple comparative chemical analyses were taken from representative mound and floor strata and floor features. Soil samples for thin section analyses were taken from archaeologically undisturbed soils within Feature 1 and within and below Feature 3C in order to study the soil structure. James Kerr of the U.S. Soils Service did additional field studies of soil structure and possible origins on representative profile walls as well as in the local vicinity of the site.

Charcoal samples for possible radiometric dating assays were collected from all charcoal deposits found in an undisturbed context. In addition, Jeffrey Friedland of Earth Sciences took several burned clay samples from burned areas of the main floor (Feature 3) for archaeomagnetic dating analysis.

The major goals of the excavation were to collect dating and ecological samples and to determine, if possible, the building pattern which was not reconstructible from previous field work. These goals were met.

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3 THE SITE

Introduction to the Stratigraphy: Site Profiles

The site of the mound was a small knoll situated on a second terrace approximately 3 km east of the Scioto River (Fig. 2.1). The underlying geological strata are sorted glacial outwash (Wisconsin) on which have generally developed Fox-Ockley soils with some associated Warsaw series. These soils are described by the U.S. Soil Survey.

> *Fox Series*
>
> In the Fox series are well-drained soils that developed on deposits of calcareous gravel and sand of Wisconsin glacial age. These soils are mainly on terraces (glacial outwash plains and valley trains) but locally are also on kames, eskers, and parts of moraines on uplands. Fox silt loams formed in 12 to 18 inches of silty material over gravel and sand, whereas the coarser textured Fox soils formed in loamy material over gravel and sand.
>
> On terraces the Fox soils occur with the Thackery, Sleeth, Westland, Wea, Warsaw, and Ockley soils. On uplands they occur principally with the Kendallville soils, though in a few places they are close to the Miami, Lorenzo, and Rodman soils. Fox silt loams resemble the Ockley soils but are not so deep to parent material. (Petro et al. 1967:133)
>
> *Warsaw series*
>
> The Warsaw series consists of dark-colored, well-drained soils on terraces that developed on stratified, calcareous gravel and sand outwash. These soils occur closely with Wea, Fox, Ockley, and Westland soils.
>
> Unlike the Fox soils, which developed under hardwood forest, the Warsaw soils developed under grass and have a darker colored A horizon containing more organic matter than the Fox soils. The Warsaw soils have a less silty upper solum, are shallower to calcareous gravel and sand, and are less acid than the Wea soils. (Petro et al. 1967:151)

In the following descriptions the Munsell color designations are given in parentheses. The color name used in the text is the common visual color.

The major part of the soils and gravels used in constructing the various mound strata, the floor of the building at the base of the mound, and the various features on that floor both within and without the building itself were the local Fox-Ockley soils and underlying gravels. The only exception was the outer cobble and bedded stone mantle (Feature 1). These stones were brought to the site from Dry Run, the banks of the Scioto to the west, or the hills at the east end of the Scioto Valley, here 6 km east of the site (Fig. 2.1). Within these stones was found a dark (10YR 4/4 dark yellowish brown and 5YR 3/2 dark reddish brown) soft loam or fine silt which has characteristics associated with the Warsaw series. Jerry M. Bigham of the Department of Agronomy, Ohio State University, analyzed thin sections made from samples that James Kerr of the U.S. Soils Conservation Service had taken from within these soils (see Appendix 3.1). These soils do not appear to have developed in place under grasses which may have covered the stones since the mound was built. It is possible, though probably unlikely, that they were placed there as fill by the original builders. It is more probable that they filtered down from upper mound layers before overgrowth stabilized the upper strata. We attempted, with the assistance of Mr. Kerr, to find possible local sources of such soils. Unfortunately historic and possible prehistoric land use has disturbed the local area too heavily to enable such areas to be found. Pocket prairies did exist in this area of the Scioto Valley historically, for example, at Prairie Station 8.5 km north of Liberty. Also, in situ prairie soils were found under a section of the High Banks Earthworks 8 km north of the Edwin Harness site (Shane 1973, personal communication 1982). Thus, although the characteristics of the soils within the mantle are clear and different from the other soils we found in the mound, the exact origin of these dark soils has not been found.

Prehistorically the surface of the knoll had been cleared into the B soils horizon with some minor filling required before the desired building level was achieved. Evidence of this filling was found in small pockets of soils with little to no structure at the upper edge of the undisturbed B horizon, as, for example, Sample II in Appendix 3.1. It is likely that materials which had been burned in the land clearing were incorporated into the layer which underlay much of the site (Feature 3C). This was a generally thin (5 cm), dark (7.5YR 3/2 dark brown) clay stratum (Sample I, Appendix 3.1). It occurred, as did all of the floor strata, within the area defined by the heavy cobble wall (Feature 1). At the outer edges of this area Feature 3C was the only floor stratum present.

Sketch profiles of the site are given in Figure 2.5. Practical difficulties prevent the presentation of one-to-one scale profiles. The field data are of course available for study. The original land clearing, construction, and other cultural activities resulted in a complicated stratigraphy of which only disjointed and truncated remnants were left in 1975. Fortunately there was still enough information to allow reasonable reconstructions. The physical characteristics of the strata follow directly; the horizontal extent will be discussed further as the floor maps are discussed.

Three profiles along grid N-S lines and three along grid E-W lines are shown. The profile along the E507.5 line (Section DD′) gives a general profile of the building floors and remaining mound strata. Since the major axis of the building is east of grid north, no grid line gives a symmetric profile of the structure. Section EE′ is a composite profile based on the floor strata along the E495 line with post holes based on data farther to the east; thus this section represents a line parallel to the major axis of the Big House.

The number of superimposed floor layers varied from one (Feature 3C) at the outer edges (east end of Section AA′, north and south ends of Sections DD′ and EE′) to five (middle of Section DD′).

All the tombs, pits, post holes, and almost all the burned areas were found on the topmost layer, Feature 3. This layer was a heavy gray clay (10YR 5/3 yellowish brown), which, as noted by previous excavators, appears to have been puddled, that is, mixed with water when put down. The major layer beneath this clay (Feature 65) was a very sandy orangish brown clay (7.5YR 5/8 strong brown), at times mottled with gray. Between these two heavy layers, a 2 mm layer of hard, reddish orange sand (7.5YR 5/6 strong brown) was frequently found. Feature 33, which was distinctive in color and texture, was found below Feature 65 on the E507.5 line but not on the E495 line. This stratum was composed of a red, sandy clay (5YR 5/6, 5YR 5/8) mottled with dark gray, pink, yellow, and light brown clays, and relatively evenly scattered charcoal bits, 0.5 to 3 cm in size. There were limited sections within this layer, such as Feature 72 (a 50 cm by 75 cm area in N535 E509), which were of the same texture and mottling as the major extent of the feature but within a brown rather than a pink-red matrix. Feature 50, a soft, moist, dark gray-brown, slightly sandy clay (7.5YR 4/2 strong brown) was found below Feature 33.

A construction break in Feature 3 was found in the E495 profile near N543. It appears likely that such a break also existed on the east side along E507.5, although the extensive prior excavations, as illustrated in the deep cut seen in the north end of Section DD′, have destroyed the evidence. It is clear that north of this point, although the activity floor level and the construction materials appear to be the same as those of Features 3 and 65, there are differences. The floor is less consistent in total thickness, and there is no consistent ordering of gray clay over orangish brown sandy clay. Areas of both types of clay are interspersed as can be seen in Section AA′.

The area shown at the south end of Section DD′ shows another variation in floor construction. Here Feature 39, brown clay (7.5YR 5/6 strong brown) mixed with sands and gravels, lies above Feature 3C. This stratum has a different color and texture from that of Feature 65, which was found directly beneath the main gray floor under the structure.

In the N-S profiles, the large posts which were set to the depths of the natural sandy gravel layer can be seen. In Section DD′ the remains of the posts defining the East Structure can be seen at the base of the backfill. The location of Putnam's and part of Mills's excavations can be seen in Section AA′, an E-W profile along the N560 line. This is near the beginning of the wider portion of Putnam's trench (Greber 1979:Fig. 6.4). Here the bottom of his trench was sloping down towards the main activity floor, which it had not yet reached. Mills did, as he wrote in 1907, dig up to the edge of Putnam's trench and through the mound floor.

The remnants of the mound construction itself can be seen in all the sketch profiles. What was an early, if not the first, covering over the parts of the Big House can be seen at the base of Putnam's trench as well as farther east on the N560 line and at the ends of the N-S profiles. This covering is a brown sandy clay (7.5YR 4/4 strong brown) with a few pebbles (ca. 12 mm). Loadings are usually distinct and 25–50 cm in size. All of the soils we excavated appeared to contain no cultural debris. In some areas, such as at the north end of Section DD′ where these soils have been placed over a cleared soil horizon rather than a prepared clay floor, the boundary between the fill and the in situ soils was less distinct. Several small features are probably a part of the early mound raising. Features 20 and 21, found in unit N560 E495 (Fig. 2.2), appear to be very large loadings or very small mounds of gravels and sands. Feature 43, found in unit N530 E492.5 (Fig. 2.3), was composed of sheet loadings as contrasted with container type loadings. Alternating sheets of sand, gray sandy clay, and charcoal were found in a very restricted area close to Feature 3. These were found at the edge of a historically disturbed area and could not be traced east to any significant extent.

Covering the base of the first fill in most areas is Feature 41, a 10 cm layer of pea gravels. These gravels are identical to those found in the local C horizon. This same type of material has been found as a major cover in many Hopewell contexts, for example, within the Seip Earthworks (Baby and Langlois 1979; Greber and D. Griffin 1982), at Mound City (Brown and Baby 1966), and in a number of other sites where Squier and Davis (1848) described it as "sand."

A second stratum of mound fill found over Feature 41 is composed of a matrix similar in color to the first fill, but with a higher percentage of gravels so that loadings are more difficult to detect. These two strata are in effect a reversal of the natural B horizon in which the deeper soils contain more gravels. This suggests that the second covering came from a greater depth, perhaps from the same borrow pit. The only artifacts which we found in the soils of this secondary fill were associated with Feature 56, a cremated burial.

Feature 1, the bottom edge of a heavy cobble wall, was found over this secondary fill. The base of this wall varied from 1.5 to 2 m from inner to outer surfaces. It was composed of waterworn pebbles 10 cm or less in size and larger stones ranging up to 50 cm in length. Included were flint cobbles, sandstone, and limestone, both waterworn and bedded. All the stones in two 50-cm wide sections through the wall at N517 and N528 on the east side were saved as a representative sample. The average depth remaining of the wall was 10 cm. In general, the smaller cobbles were found on the inner edge with the larger stones on the outside. It is likely that the edge row of large stones extending almost 6 m north from N532 on the west side of the site is the end of the elliptical "ring" which Mills (1907, 1903) described on the west flank of the mound.

Over the secondary fill, which, as previously noted, extended under and beyond Feature 1, were soils that apparently eroded down from higher parts of the mound. At times the boundary between these soils and the secondary mound fill was difficult to distinguish, possibly because these soils had a similar geological origin. The north end of Section DD′ shows an example of this type of stratigraphy. Auger samples taken on a line continuing north from this profile show that the slough layer ended within 10 m.

To summarize, the remnant mound strata found from the southwest corner of the mound, continuing clockwise around the perimeter of the mound towards Backhoe Trench 2, were a first fill covered by a thin layer of pea gravel, followed by a secondary fill capped by a stone wall. The lower fills extended beyond the base of this wall. The secondary fill was covered over time with soil eroding from higher up the sides of the mound. There is a different stratigraphy on the southeast and south edges.

In Section FF′ Feature 69A is seen directly over the pea gravels of Feature 41. Here these gravels are more sporadic and appear to have been disturbed, probably by the placement of this upper stratum, which is composed of a distinctive, dark sandy loam (10YR 3/2 very dark grayish brown) with a high density of small to medium gravels. We found no artifacts in these soils, nor in the similar soils of Feature 69 (Section BB′). Within both of these extended dark strata were deposits or discrete sections which were darker (2.5YR 2.5/0 black) and more compact. These areas (Features 55, 68, 80, 81) contained a high density of rock, much of which was apparently fire cracked, and large pieces of charred wood and charcoal. Feature 55 extended 3 m by 2.6 m and was 55 cm deep. The rocks within the feature were predominantly limestone and ranged from pea gravels to 15 cm rocks; the average maximum fracture edge length was 10 cm. Below Feature 55 was a pit extending down into the C horizon. A bundle burial (Feature 60) was found at the base of this pit. No other pits were found associated with any of the other rock concentrations recorded.

It is likely that the intrusion of Feature 69A under the rock wall which is seen in Section FF′ is the result of prehistoric disturbance. The major archaeological disturbances on the east side of the site prevent the location of the first fill in some profiles (see Section DD′). Here again the outer dark, humic layer has been placed up to or under the heavy rock wall. A small section of secondary fill appears under the dark layer in Section BB′ but not in Section FF′. The relationship of Features 69 and 69A to each other is not clear from the available evidence.

To summarize the mound strata found in 1976–1977, the lowest fill found was composed of soils likely taken from the upper levels of the local B horizon. These soils contained no artifacts and were deposited over the main activity floor and outer fringes surrounding this main area. Over this fill, up to some unknown depth, was a thin layer of pea gravel identical to gravels found in the local C horizon. This thin layer extended outward and usually beyond the lower edges of the first fill. On top of this gravel was a second fill composed of soils apparently taken from lower levels of the local B horizon. These soils contained no artifacts except those associated with a cremated burial found on the east side of the site. On top of this fill was placed a stone wall which was probably intended to retain upper layers of mound fill. This wall was above the irregular outer edges of the prepared knoll surface; however, underlying mound strata extended beyond this wall. On the southern and southeastern edges of the site a dark, humic soil containing gravels but no artifacts was placed up to or upon the mound. There are indications that earlier mound strata were disturbed as this soil was added to the complex. Discrete areas or deposits within this dark soil contained very dark, compact soils mixed with burned rock, predominately limestone, and burned wood and charcoal. No artifacts were found in these very dark soils. The exact horizontal extent of the one or several areas of these outer dark soil strata is not known.

The Horizontal Extent of Floor Strata

Mills's general description of the "clay floor" is in accordance with what we found; viz., "in some places it was only three or four inches in thickness, in other places from ten to twelve" (1907:138). He also describes Feature 3C and the original soils below it: "The original surface of the site was covered with ashes and charcoal. . . . Nowhere were there evidences of any prolonged fire on the original surface, rather only the burning of small limbs as evidenced by the charcoal remains" (1907:138). The extensive areas of Feature 3C which we found did not have large pieces of charcoal, even from the "burning of small limbs." It may be the lack of large pieces rather than direct evidence of limbs which Mills is describing. The layer, as discussed above, was not in situ. We also did not find any evidence for burning on the natural soil horizon. Including Mills's description, Feature 3C, the dark clay stratum, underlay the Big House and the entire activity area; this is generally the same area as defined by the inner edge of the heavy cobble wall. Feature 3C was under or within a meter or so of this wall edge around the entire site.

The overall extent of the main activity floor, Feature 3, appears to have been from the outer edge of the portico on the north and south, definitely beyond the portico on the west. Feature 3B was a single layer above Feature 3C and abutted the western edge of Feature 3. It was more gravelly but generally similar to Feature 3. It was under the west end of Feature 6 and extended several meters south and appears to have been just a local variant in construction materials.

Feature 65 appears to have directly underlain Feature 3 in most areas of the site. At the outer edges there were some minor variations as to which extended farther (e.g., see Fig. 2.5). Feature 39 may have been a part of Feature 65; however, the heavy historic disturbances prevented the establishment of a direct connection. The slight differences in texture may have been accidental or perhaps associated with the end of the portico area.

Feature 33 and the underlying Feature 50 appear to have been only in the northeastern area under parts of the Big House and portico (Fig. 3.1). The horizontal extent of these features does not appear to coincide with any single portion or portions of the Big House. As described above, Feature 33 was the most distinctive floor stratum found. If we assume that the portions found in the same stratigraphic sequence around disturbances caused by Mills's major excavations are the same stratum, then the westernmost piece of Feature 33 was near N546 E500, the northwest corner near N553 E505, and the southeastern edge near N535 E509. Although the exact shape cannot be known, the north and south edges appear generally to be oriented magnetic east-west. In the relatively extensive areas of this feature, which were hand troweled, no post pattern was found. We were rather hoping that an "Adena" house would appear. It is possible that a small structure with shallowly set posts (less than 10 cm) could have existed in the southwest heavily disturbed section of the feature. I think it is more likely that the area had been used without a major structure. Perhaps the mixed burned clays and charcoal bits were culturally significant remains from the land clearing and other activities associated with the first use of the site. Such an origin, as carefully cleaned up and redeposited debris, would be in keeping with the character of various types of features found on the main activity floor.

The Building Post Pattern

At the base of the Edwin Harness Mound were the remains of a large building, which in keeping with known Native American languages we can call "Big House." This

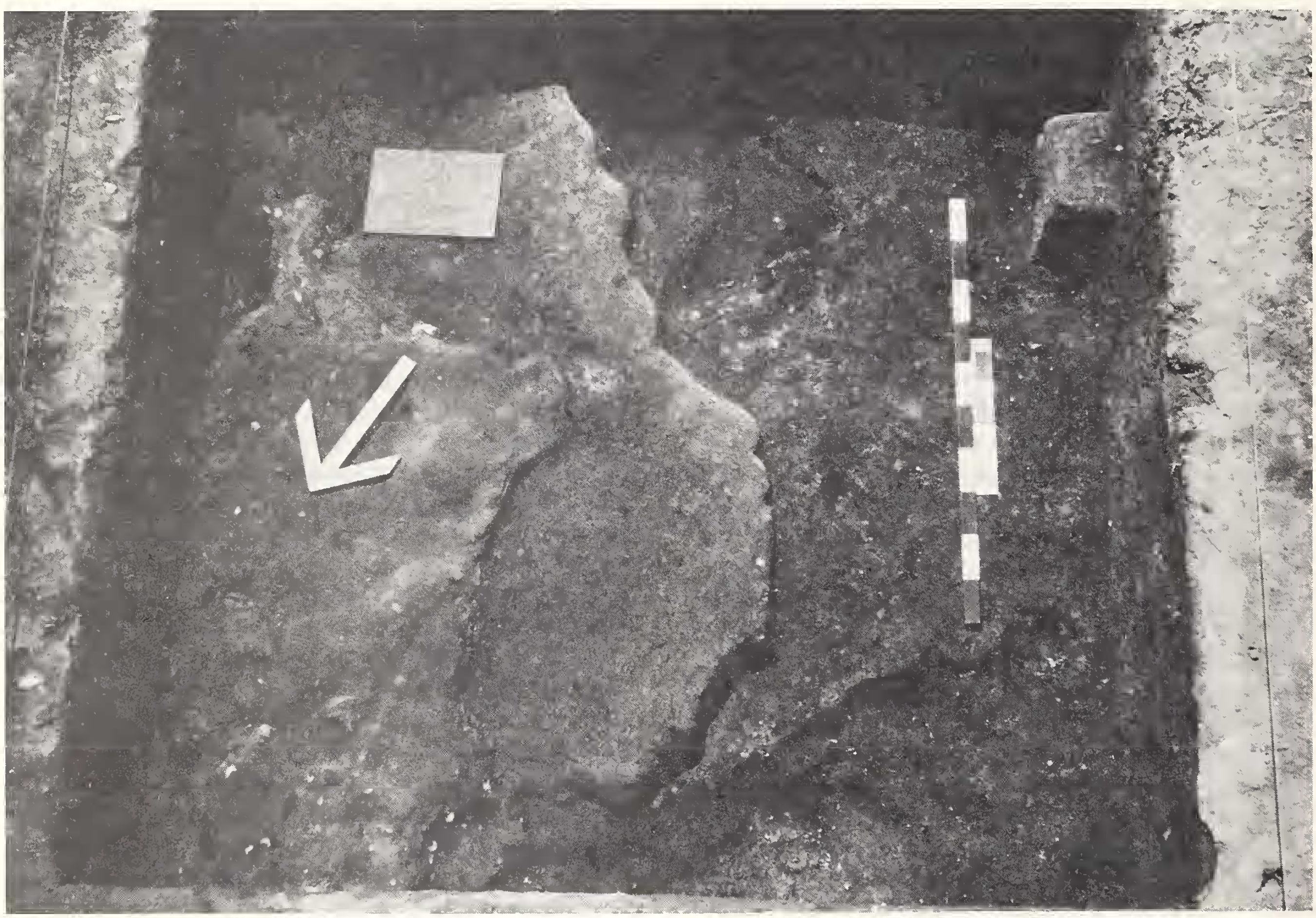

Fig. 3.1. Cuts made by Mills in 1905 through the original floor layers. The main activity floor (Feature 3) has been cut through, as has the secondary layer (Feature 65), thus exposing the reddish clays of Feature 33. Unit N550 E510, level 5, 29 June 1977.

is a translation, for example, of the Shawnee *m'šikamekwi* (Greber 1979:28) or the Creek *tcoko-thlako* (Hudson 1976:221). The same word is used in Shawnee for stomp dance ground (Charles Callendar, Case Western Reserve University, personal communication, 1983); thus, the English translation has connotations not of a large residential house but of a special activity area. Also at the base of the mound were the remains of cultural activities which took place about the Big House within an area which, though not symmetric, was apparently well defined.

There are several major parts of the Big House (see Figs. 2.4, 2.6). The floor plan outline of each of the largest two parts is a classic Ohio Hopewell nearly rectangular, rounded corner design (Baby 1971; Baby and Langlois 1979; Brown 1979). These two parts, the North Section and the Middle Section, are joined by a rectangular hall. The South Section, which is circular in floor plan, is joined directly to the Middle Section. On the east is a small, again classic in floor plan, structure which is joined to the other elements by a corridor area. A wall extends around the north side of the East Section. The post pattern of these basic parts has been abstracted from Figure 2.4 and presented in Figure 3.2. Because of the historic disturbances prior to 1976, the building posts were found at differing depths and with varying degrees of disturbance from none to total. The latter was rare. The size of each post hole indicated in Figure 2.4 is the size first found in 1976 or 1977. In Figure 3.2 adjustments have been made to an estimated original floor.

There is a portico-like area about the entire complex which is demarcated by large posts on all sides. On the south, west, and north along the line of these posts is a shallow, clay-filled trench containing small stake holes. These were likely supports for a screen or narrow wall which would have formed an enclosure about the Big House. There was no evidence of such a shallow trench on the east side of the house because of the extensive removal of the main floor area in the 1903 and 1905 excavations (Mills 1903, 1907). However, considering the east-west asymmetry of the complex, there may not have been such an enclosure on the east side.

The two major elements are similar in general architectural design. There is a set of 48 inner posts (average post size 24 cm) which forms the structural strength of the building. These posts are arranged in seven rows N-S and E-W. There is some bending of the rows to turn the corners and some space left at the center of each building. The E-W separation of the rows is the same for both, averaging 1.6 m center to center. The N-S separation, however, is greater in the North Section (1.9 m compared to 1.6 m). Thus there is a more spacious floor plan in the North Section, but the same number of structural supports. The size and placement of these supports strongly suggest that there had been an upper floor or platform area. There was at least one post from the North Section which was just over 10 ft (3 m) high. This charred post, which was photographed by Mills in 1905, is probably the same one which was sketched by Putnam in his field notes (1884). Within the identified sample from the 1976–1977 excavations, the major construction timbers were young hickory trees (Table 5.1). The exact length available from a tree which could have fitted into the recorded post holes cannot be calculated because of the many complex environmental variables involved. However, for similar environments, 58 ft (17 m) heights are recorded for 18 cm diameter trees in Silvics of North America (Fowells 1965:126).

The next outward series of posts in both the North and Middle Sections architecturally appear to have supported a facade or, more likely, a roof for the area defined by the 48 inner posts. There is some variation possible in the number of posts contained in this series because of the common boundaries with the hall and the South Section. This series contains posts of different diameters and different spacing in the two sections. The Middle Section has a paired post corner arrangement and at least 2 larger posts in the western line. The majority of these posts average 18 cm in diameter; a few are 25 cm, while the 2 large posts on the west are 40 cm. There are a total of 39 posts in the series plus, possibly, Posts 378 and 387 (Fig. 2.4). For the North Section there are probably 42 posts in this series, plus possibly Posts 42 and 72. The average size of the northern posts is 23 cm. In general, these posts are more widely spaced than those of the Middle Section. There is relatively closer spacing at the corners. The larger post size for this post series in the North Section may be related to the longer spacing between posts. It is possible that in the original building design the same number of posts had been used in this series in both sections.

The last series of posts differs on the east and west sides of both structures. Those on the east (13 cm average diameter) are evenly spaced and may form a formal facade or decorative line. Those on the west side are also mainly small, but their placement is irregular and scattered. They do not appear to be structural posts. Four short lines of posts form a hallway or corridor between the North and Middle Sections.

As is shown in Figure 3.2, the South Section is outlined by posts of three size ranges: 7 cm average diameter, 15 cm, and 24 cm. The central posts of this element may have served as structural supports; however, the contents of at least one of these (Post Hole 216) suggest that they also served other functions. The materials recovered from post holes are described in another section of this chapter.

The East Section is outlined by small posts (10 cm). This, as the South Section, is of small scale. It does not appear likely that there had been an upper level in this structure. The outer wall on the north side is composed of posts 18 cm in average diameter.

The outer post holes which ring the complex average 27 cm in diameter on the west side and 18 cm on the east side. Next to or about these posts on three sides of the structure

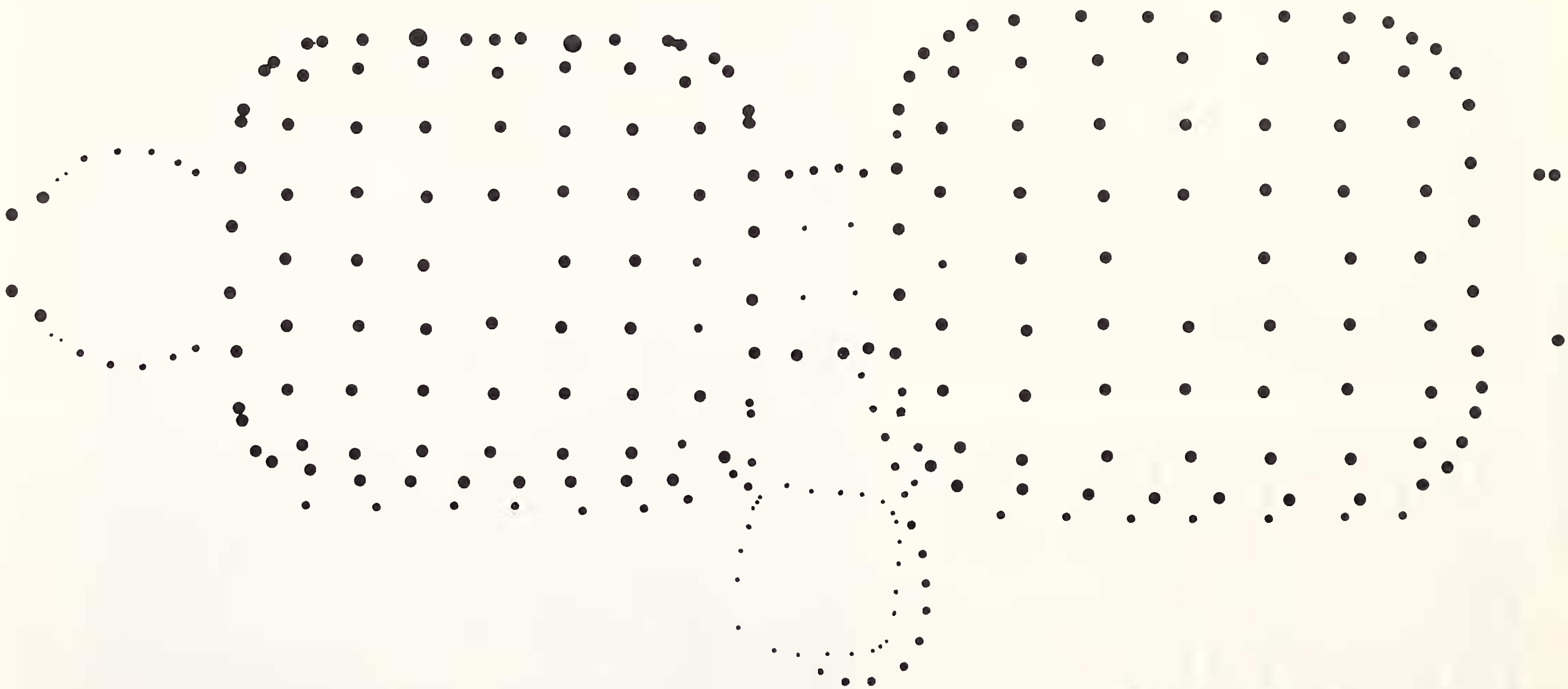

Fig. 3.2. Floor plan of Harness Big House based on posts as found in Fig. 2.4. Here post hole sizes indicated are estimates of original sizes on the main floor of the building prior to all excavations.

was a shallow (8–13 cm), narrow (15–20 cm), clay-filled trench (Features 22, 59, 85, 88) which contained small stake holes ranging in size from 2 to 5 cm (average 3.6 cm). Along the east side, these holes were at varying angles in the clay such that stakes set in the holes would tilt, apparently at random, towards the north or south but would remain in the same plane. These stakes likely were part of a screen or fence which was constructed after the main floor had been completed. All the floor graves appear to have been within the area enclosed by the trench and outer posts. Other types of remains of cultural activities—mainly burned areas and deposits, a few post holes, and pits—were found outside this boundary.

Other Posts

The remaining post holes found fall into three size classes: large (over 25 cm), medium (10–20 cm), and small (less than 10 cm). The number of each size associated with the several parts of the Big House are given in Table 3.1. The range in the depth from the top of the main floor (Feature 3) to the bottom of the medium-sized post holes which were found basically intact was 23 to 40 cm. The corresponding depth for the small ones was 7 to 19 cm. Thus there may have been additional small posts in sections where Mills removed both Feature 3 and Feature 65 (total depth ca. 12 cm). The main sections where this had been done were near the center of the site in the vicinity of the hall and the East Section. It is less likely that evidence of medium-sized post holes was completely destroyed in the earlier excavations.

The small posts found associated with the South Section are generally about the perimeter. The four medium and large posts are more centrally located. In the Middle Structure, the largest number (12) of the medium posts found form the last series of posts on the west side of the structure as described above. Approximately half (17) of the small (here 3 cm) posts are located along the east side from the center line of the structure to about 4 m south of the center. The remaining small posts are scattered less densely (Fig. 2.4).

TABLE 3.1
Non-structural Posts Associated with
Edwin Harness Big House

	Location					
Diameter (cm)	*North Section*	*Middle Section*	*East Section*	*Central Hall*	*Corridor East Section to Hall*	*South Section*
<10	39	31	0	0	2	14
10–20	40	25	1	7	5	4
>25	2	6	0	0	0	1
Total	81	62	1	7	7	19

In the North Section the medium posts are also in an irregular line on the west side. Others were found within the last western row of the central structural posts, outside the northern end, in the northeast corner, and as part of the grouping which forms the central focus of the building.

A few posts holes were found outside the portico: Post Hole 2 (20 cm diameter) on Feature 3 near Feature 17 and four post holes a short distance north (79,59) or east (156,206) of the main complex (see Fig. 2.6).

Contents and Description

In general the main structural post holes were straight walled, frequently with a clay lining below floor levels, and also frequently bottoming in the C horizon gravels where drainage is excellent. An exact inventory of the contents of these posts cannot be given due to Mills's extensive excavations (which were appropriate) and the loss of his field notes (which is unfortunate). Describing the contents, he says, "Very frequently these molds would contain broken animal bones, mussel shells and occasionally a piece of mica. We have never been able to find in the great number of molds examined, any implements or ornaments" (1907:138). Any of these objects could have been accidentally swept into the hole by the prehistoric occupants of the building during the cleaning up of activity debris from nearby floor areas. Such cleaning would be in character with the apparent manner in which shallow deposits of mixed materials had been made on the floor (see following section). The majority of objects which we found within post holes were similar to those found by Mills and appear to have been accidental inclusions. The small rocks, pieces of fabric, and perhaps sherds, which we also found, were likely used as wedges. However, there were incidences of apparently deliberate filling of some post holes. These post holes were constructed in the same manner as were others of similar diameter.

Although numbers of posts were burned before the first stage of mound building, there were posts which were removed. This procedure has also been found in our current work within the Seip Earthworks. James Brown of Northwestern University has discussed with me similar findings at Mound City, and there are reports of similar activities (for example, at Garden Creek, North Carolina) from Middle Woodland sites outside Ohio (Chapman and Keel 1979).

At least one post hole was filled with a collection of materials similar to the deposits on the floor. Post Hole 216 contained a variety of burned woods (Table 5.1), ash, shell, bone, apparently fire cracked rock, and mica pieces, some of which were 8 by 3 cm. The soil surrounding these objects was oily. Another non-structural post which had been removed was Post Hole 178, immediately north of the Big House. A small egg-shaped clay basin had been

Fig. 3.3. Location of post holes with surrounding stains. Only those post holes which were surrounded by rings of iron stain are indicated by solid circles. Small posts have been relatively enlarged for visibility. See also post descriptions in chap. 3, Fig. 2.4, Table 3.1, and Table 5.1.

constructed over this hole. The basin (Feature 62) had contained a fire which reddened some of the surrounding clays (5YR 4/6 yellowish red). The fire, as in Post Hole 216, had contained several varieties of wood, including the second recorded occurrence of pine (Table 5.1), and six fragments of mammal bones.

The post had also been removed from Post Hole 25. This was a 26 cm E-W by 30 cm N-S hole which extended 56 cm below the floor surface and was located along the narrow trench on the west side of the North Section. In this hole a human skull and mandible was found. Parts of the skull were colored red, apparently from red ocher. Holes had been drilled in the ascending rami of the mandible in such a fashion that skull and mandible could have been articulated. The skull has been identified by Raymond Baby (personal communication 1977) as that of a young adult male. No ocher, charcoal, or any other cultural materials were found within this post hole.

One characteristic that divided the post holes into two classes regardless of size was a "rusty" stained ring which surrounded 85 of the post holes (Fig. 3.3). This ring, which averaged 2 cm in thickness, was irregularly shaped and ranged from less than 1 to 25 cm from the edges of the post holes. It was surrounded in most instances by a fine black line. The area between it and the post hole tended to have a "crusty" texture. Putnam's description of such rings in his field notes coincides with our findings in the central area of the North Section, which was within Putnam's trench. This stain was present about the entire post hole; thus, evidence for its existence was not destroyed by previous excavations (see Fig. 3.4). These rings appear to be caused by the movement through the soils of water soluble forms of iron (this leaves an orange stain) which are preceded by the movement of manganese (this forms a thin black line). I have not yet been able to find suitable chemical tests to prove that these rings were caused by deterioration of coloring used on the posts; I believe that they were. The patterning of these posts is shown in Fig. 3.3.

Of the nine structural posts with such stains in the North Section, one was within the central focus area; six were in the southeast corner; two were near the middle hall. The north three posts on either side of the hall had stains, as did the post in the Middle Section opposite the center line of the hall and the stained post in the North Section. The other stained structural posts in the Middle Section were paired corner posts, two pairs on the west side, one on the east. In the South Section, the stained posts appeared to be symmetrically arranged with respect to the two oak posts (Table 5.1). This pattern may indicate that the entrance to the structure was towards the southwest, and Post Hole 216 would form a line with this entryway. The posts forming the west side of the East Section and one additional post on the north also had accompanying rust stains. The area between the East Section and the middle hall had such posts along the north and the west sides.

Fig. 3.4. Examples of post holes with surrounding stains. The rings of iron stain continued the length of the posts as illustrated in the middle sections of the site where Mills removed extensive portions of the floor strata and post holes were found in 1976 and 1977 under extensive backfill. Unit N537.5 E497.5, level 3, 75 cm below base of SW stake, PM 34, 37, and 38, 29 July 1976. These posts are on the west side of the Middle Hall.

Of the non-structural posts found in the North Structure which had rust stains, six were within the central focus, single posts were at the southwest and northeast corners, and four posts were just outside the north end. In the Middle Section most of the small clustered posts on the east side had stains, as did several within the last south row of the main structural posts.

In summary, at least half of these specially marked posts were located near entranceways or near the perimeters of parts of the Big House. The others appeared to be marking various special areas within the interior of the building.

Central Focus of the North Section

The center of the North Section had a more complicated configuration than that of the Middle Section. This was an area which had been excavated by all previous expeditions except those of Moorehead. The most information on the original deposits about this area is found in

Putnam's field notes. The small (Post Hole 432) and medium-sized (Post Hole 444) posts set on either side of the geometric center of the building were surrounded by rusty stains, as were the other non-structural posts about the main posts 23 and 462 in the next row towards the west. The southern edge of the large (ca. 1.5 by 4.5 m) deposit of burned matting and charcoal described by Putnam was apparently located at the northern end of the area marked by these stained posts. The long axis of the deposit was E-W; thus, it extended relatively symmetrically on both sides of the building center line. In the Peabody Catalogue (Number 34982) the deposit is described as being "1 to 4 inches thick and on burnt clay about 1 foot from the bottom of the mound." The field notes call the floor on which the tombs were found "hard pan"; this is the same as our Feature 3. The stratigraphy containing the charcoal deposit is given in a label for a sketch as "hard pan" at the base followed by "clay & gravel 6 inch [*sic*], sand ½ inch, pure clay 4 inches, charcoal layer 2–4 inches, clay, gravel & loam."

Three feet (ca. 1 m) above this deposit was a 1-ft (30-cm) thick deposit of sands and gravels which extended 3 by 4 ft (1 by 1.3 m). A "basin-like cavity" apparently associated with these sands and gravels contained mica, shell, flint, carved bone, and an unusual human effigy pipe (see Fig. 3.5). The horizontal location of the gravels and cavity are not given; thus, it is not clear whether this cavity was deliberately created or the result of a cave-in of the roof of one of the tombs underneath the gravel deposits. One of the few extended burials found in the mound was located at (or possibly on) the eastern edge of the matting. This is "Skeleton 3" in "Burial Chamber No. 6." A copper plate had been placed lengthwise on the chest of the individual whose head was towards the southeast. A second extended burial "Skeleton 1," also with head towards the southeast, was located just north of the northwest corner of the burned deposit.

An extensive ash deposit was found southwest of the charcoal deposit in the vicinity of Feature 24 at the southwestern edge of the central space. Another unusual specimen, a carved stone sphere (Willoughby 1916: Pl. 10i), was found at the edge of this ash area, which is described in the field notes as "distinct masses occurring from a few inches to 3 feet above the clay." In summary, the archaeological evidence about the central space of the North Section suggests much more extensive activity than was found in the center of the Middle Section. The scale of these deposits is also greater than that of any of the other deposits which we found. The major deposit found by the schoolboys was probably part of this central focus. No other extensive deposits have been reported in any of the available records.

Burned Areas on the Floor

All the burned floor areas found, except Features 18 and 36, were reddened and fire hardened to a depth of 2 cm or less. Similarly, the individual charcoal deposits were also thin. Features 18 and 36, which were within the Big House, were different from each other. Feature 18, which was in the southwest corner of the North Section, appears to be the remnant of a heavily fired prepared basin. There was only a strip 40 cm long by 1 cm wide remaining in place, but large chunks (7 × 15 cm) of heavily burned clay of the same color and texture were found in the nearby backfill.

Fig. 3.5. Pipe fragment (4.5 cm × 3.5 cm) found by F. W. Putnam over deposit of burned matting immediately north of geometric center of the North Section. Photograph courtesy of Peabody Museum of Ethnology and Archaeology, Harvard University.

Feature 36, which was at the center of the Middle Section, contained the deepest evidence of fire hardening found. Here in an area 120 cm N-S by 70 cm E-W, hard, red sand (2.5YR 4/6 red, 5YR 5/8 yellowish red) was found through the gray clay floor. The soils were reddened and hardened to the depths of the underlying C gravels. Thin (1–2 cm) layers of cemented sand and pea gravels and ash (0.5–4 cm) were found on top of the sand. Unfortunately, this, as all fired areas found within the Big House, had been archaeologically disturbed to some degree. In a sample taken from the in situ layers of Feature 36, pine wood has been found. This is one of only two examples of this type of wood in the identified floral samples (Table 5.1).

Mills in his report describes fires set on top of graves. Such fires may have been the origin of the burned areas on the portico immediately west of the North Section (Feature 78, about Features 28 and 29); and the areas within the South Section (Features 82B and 92). No artifacts were found associated with these or any of the other fired areas within the Big House or the portico area.

More complete stratigraphy is known for the fired areas found on the west and north sections of the site. In some of these areas, ash and any burned matter had been cleaned away and only the reddened and fire hardened clay floor was found (Feature 22 and sections of Feature 16). Other discrete areas (Features 6, 7, 8, 9, 10, 49) were fire reddened floor areas covered with a thin (2 cm or less) lense of ash and charcoal, and then a final covering of sand, gravels, or clay. None of these features contained any artifacts.

The areas in which some materials were found (Features 31, 44, 45, 46, 51, 53, and 53A) consisted of thin deposits of mixed charred and sometimes uncharred materials, placed on burned and unburned sections of the floor. As is described in the discussion of stratigraphy, the floor west of the Big House was somewhat different in character from that on the north. North of the building there were more patchy and more mottled sections of floor. Frequently there was only one layer above Feature 3C. This peripheral floor was gray clay, as Feature 3, or orange-brown sandy clay, as Feature 65, which was stratigraphically directly beneath Feature 3 under the Big House. Thus the charcoal deposits shown in Figure 2.6 which are not on a gray floor were found on an orange-brown sandy clay floor.

The deposits of materials were not the results of in situ burning. For example, in Feature 31 a thin (1–4 cm) layer of sterile brown sand had been placed over a cleaned reddened floor area; then a layer (1–2 cm) of thoroughly mixed charcoal, fired clay nodules, and an unidentified mammal bone fragment were placed on top of the sand. In Feature 44, a series of thin layers containing burned beads, cut mica fragments, broken bladelets, and bone fragments were deposited over burned and unburned areas of the peripheral mound floor. The three whole plus several fragments of clay beads and the single fresh water pearl found were likely part of a necklace, which included many canines (see chap. 6). These burnt and broken drilled canines included fox and raccoon. Other faunal material in the deposit included 51 turtle shell fragments; 2 bird bones; 1 bird talon; 3 catfish vertebrae, one of which was modified; 13 mammal bones; and 42 unidentifiable bone fragments. All bone was burnt. Twenty-seven bladelets have been identified from 35 pieces.

Feature 45 was similar in construction to Feature 44 but contained less material. There were mica fragments; clumps of burnt sand; 28 burnt mammal bone fragments, 3 unburnt; 3 bird bone fragments; 5 unidentifiable bone fragments; several fossil fragments; and one bladelet midsection (see also Tables 5.2 and 5.3).

Feature 46 contained only 5 baked clay nodules and 2 burnt mammal bones mixed in with the charcoal deposit. Feature 51 was smaller in extent than the other deposits and contained a flint chip, 11 mammal bones, and 1 left distal deer radius.

In Feature 53, a 1–2 cm layer of gray clay had been placed on a fire reddened surface (Feature 53A); another layer of dark clay (1 cm thick) had been placed over this gray clay. On top of the dark clay was found 1–2 cm of fire reddened clay covered with scattered charcoal, bladelet fragments, and bone fragments; all these were covered by a mottled gray clay. The 3 bladelet pieces represented 2 different bladelets. Seven mammal bone fragments, 1 burnt mammal bone fragment, 1 unidentifiable bone fragment, and several flint flakes were in the deposit.

To summarize, each deposit outside the Big House was carefully prepared; the number of artifacts and volume of deposit were small. The unburned objects found may have been used in the activities immediately associated with the lighting of the fire which burned the remaining materials. No pottery sherds were found in any of these deposits.

Feature 54A is an unusual deposit associated with an 80 cm diameter, 19 cm deep depression found in the main floor west of the Middle Section (Fig. 2.6). Feature 3 thinned into a negligible thickness at the center of this depression. Feature 65, which was about 2 cm thick here, followed the line of the depression. A thin layer of dark clay with deposits of charcoal and charred twigs was found between the two main floor layers. At 80–100 cm from the depression center Features 3 and 65 were, as more usual, 5–6 cm thick. The deposit on Feature 65 was offset from the center of the depression (see Fig. 2.6). Soils which were the same in color and in texture as the local B horizon were found extending into the yellow C gravels immediately below the depression. A thin layer (1 m diameter) of charcoal was found 19 cm below the center of the depression; however, not the center, but the south edge of this deposit was directly below the center of the depression. A few apparently fire cracked rocks and flint flakes were found within the charcoal on Feature 65; nothing was found within the lower deposit. The origin of the depression is not clear. Perhaps it resulted from the settling of a relatively large section of fill needed during the original land clearing; perhaps it was intentionally constructed. There was no open arch above this depression as was usually found over the collapsed tomb roofs (e.g., Putnam 1884). The small trench about the portico area was cut through the depression; the trench also cut along the east edge of the heaviest section of the charcoal deposit on Feature 65.

There were three other deposits of charcoal found below the main activity floor (Feature 3). Feature 57, a deposit of hard ash and charcoal, 1–2 cm thick as usual, extended 40 cm N-S by 60 cm E-W on Feature 50 (below Feature 33) at N548 between E506 and E505. There were scattered bits of charcoal found 10 to 75 cm about this deposit. There was a small (5 × 15 cm) area of orange stain found near one edge, but there was no definite evidence for in situ burning. Similarly, Feature 97 was found on an unburned surface. A thin (less than 2 cm) layer of powdery charcoal lay between Feature 3 and Feature 65 at the edge of the disturbed main floor (N542.5 E495). It extended N-S, and was apparently the western edge of the original deposit; no significant extent was found in tracing this deposit west. DIC-662 is from this feature (Table 3.2). Feature 73 was a 90 cm N-S by 33 cm E-W layer of charcoal deposited on gray clay east of the North Section and below Feature 33. A dark red burned area was found at the southern edge of the feature.

The charcoal was covered with a thin layer of mottled yellow-gray clay which contained many small limestone pebbles. There were also limestone pebbles mixed with the charcoal found in the northern end of the feature. Except perhaps for the deeper deposits below Feature 54, the deposits of charcoal found under the main activity floor appeared to be similar in character to those found upon the floor; that is, they were carefully constructed, thin, and with few artifacts.

Pits

Sketches of various pit shapes found are shown in Figure 3.6. Feature 17 was the only pit found which was on the main floor outside the Big House. Features 19, 30, 79, and 89 were within the Middle Structure; Feature 91 was in the North Structure. This known distribution may be close to the original distribution of relatively deep pits since at least the bottom of such features would have been noted in the heavily disturbed areas. If the known distribution is the original distribution, then such pits occurred only on the west side of the Big House and the portico. Shallowly cut features, if any, were lost.

The apparent major difference between the contents of the pits and the floor deposits discussed above was the presence of pottery in three pits. Probably one cordmarked vessel was represented in Feature 19 and two in Feature 30, while Feature 89 contained cordmarked and Hopewell series sherds, parts of possibly six to nine vessels (see pottery analysis in chapter 4). Feature 19 also contained 3 mammal canines; 75 unidentified bone fragments (40 burnt, 35 unburnt); 7 shell fragments; and a mica fragment. Feature 30 contained similar items. These were 3 mammal canines; 1 fragment of deer ulna; 96 other burnt bone fragments, 9 unburnt; 13 shell fragments (see shell analysis in chapter 8); 2 mica fragments; 15 flint flakes; 4 fire cracked rocks; and 4 fossils. Feature 89 contained 7 burnt canines; 55 burnt unidentified bone fragments, 45 unburnt; 6 shell fragments; 10 pieces of worked flint; 2 bladelets; 1 clay bead; 12 fossils; and numerous small mica fragments. Although Features 79 and 91 were heavily disturbed, they contained some charcoal as did the other pits. Also within Feature 91, 12 unidentified bone fragments and 30 identified shell fragments were found.

TABLE 3.2
Radiocarbon Dates

Lab. #	*Provenience*	*Material*	*Radiocarbon Years (B.P.)*	*Comment*
DIC-661	Fea. 17	Wood Charcoal	1490 ± 65	
DIC-662	Under Fea. 3	Wood Charcoal	2150 ± 155	sample size, 4 g**
DIC-663	Fea. 19	Wood Charcoal	1620 ± 65	
DIC-664	Fea. 30	Wood Charcoal	1500 ± 60	
DIC-664 Rerun	Fea. 30	Unused Benzene from original burn	1600 ± 65	
DIC-665	PM. 32	Wood Charcoal	1820 ± 70	
DIC-801	PM. 36	Wood Charcoal	1900 + 460 − 500	sample too small; indicator date only
DIC-802	Fea. 31	Wood Charcoal	1630 ± 70	
DIC-860	Fea. 53A	Wood Charcoal	1500 ± 50	
DIC-1189	Fea. 69	Charcoal [Gleditsia (Sp) 100%]*	Modern	burnt honey locust root over Fea. 68
DIC-1187	Fea. 62	Charcoal [Carya (Sp) 55% Quercus (white) 40% Quercus (Sp) 5%]*	1770 ± 50	
DIC-1188	Fea. 81	Charcoal [Carya (Sp) 55% Fraxinus (Sp) 15% Juglans (Sp) 20% Quercus (white) 10%]*	1140 ± 60	
DIC-1190	Fea. 55	Charcoal [Quercus (red group) 100%]*	1110 ± 50	
DIC-1635	Fea. 56	Burnt bone	1200 ± 65	

*Percentages of 20 random pieces identified by University of Michigan Ethnobotanical Lab.

**Using long-term average background count, the date is 1980 ± 155 B.P.

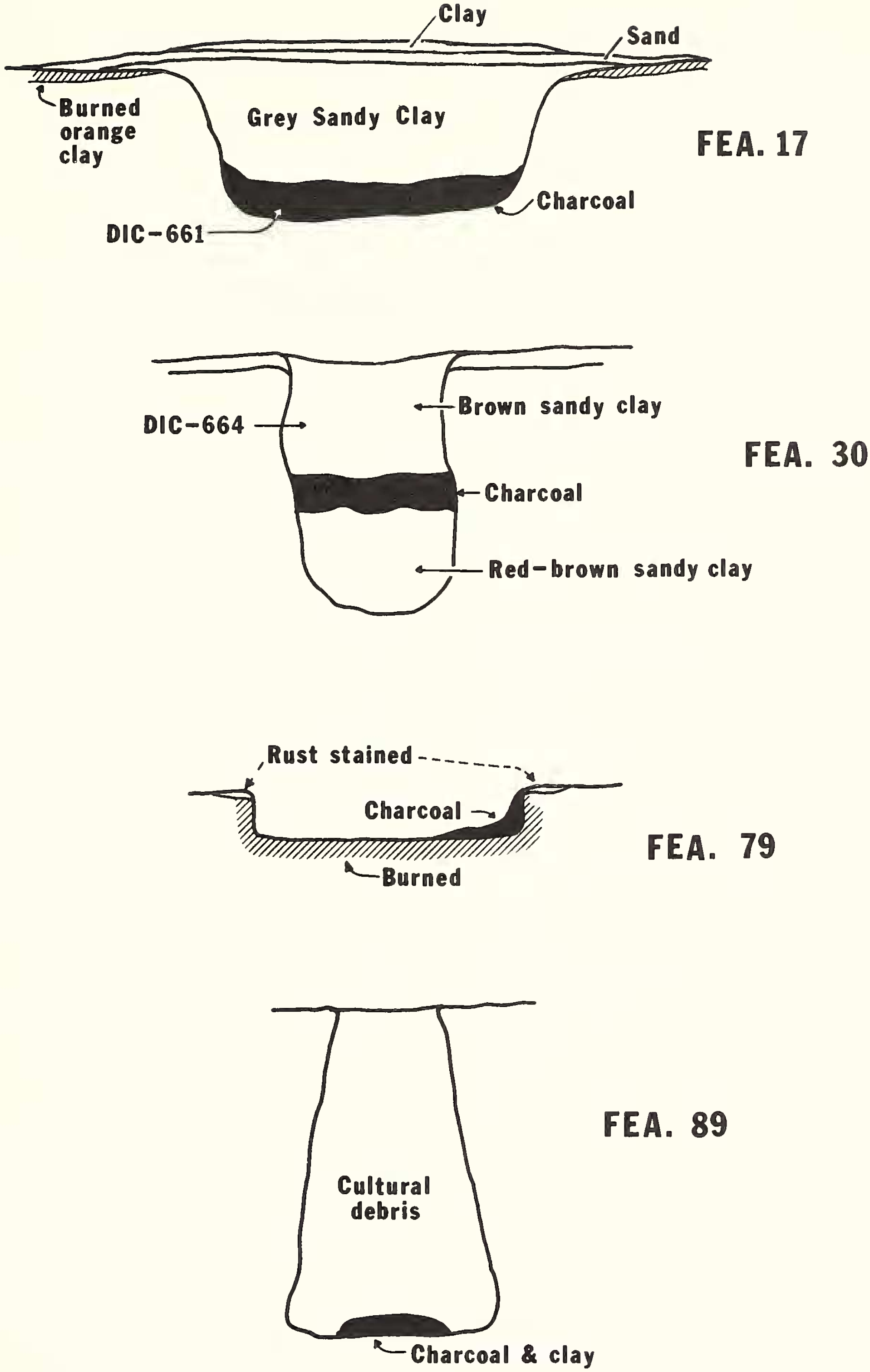

Fig. 3.6. Sketch profiles of pit features: *Fea. 17*, 120 cm N-S × 72 cm E-W, 45 cm deep; *Fea. 30*, 48 cm N-S × 53 cm E-W, 77 cm deep; *Fea. 79*, 40 cm × 37.5 cm, 9 cm deep, N-S diagonal 43 cm, E-W diagonal 44 cm; *Fea. 89*, top 34 cm N-S × 32 cm E-W, base 55 cm N-S × 53 cm E-W, depth 71 cm. (Grid north referenced.)

Feature 17, which was in situ, showed careful cutting, filling, and covering. Within it were found 4 fragments of human bone, fragments of at least 2 canines, 1 bird bone, 108 mammal bone fragments, 129 unidentified bone fragments, and 2 flint flakes. Large amounts of wood charcoal were found as well as wild food remains (see flora analysis in chap. 5). The rather idiosyncratic nature of the pit profiles and the limited quantities of artifacts found within the pits appeared to reflect single use. They likely contained the remains of one cultural event, which was probably associated with the performance of a ritual or ceremony.

Other Features

The historic pits noted in Fig. 2.6 are obvious, but of course are not the only spots which were literally dug up prior to 1976. Feature 24 was, as previously described, associated with the work of Squier and Davis (1848) followed by just about everyone else. The digging style shown in Feature 77 I would identify with "The Boys," even though Putnam's notes may indicate another location for the schoolboys' second pit. The remaining pits I assume were dug about post holes, aboriginal pits, or other possibly deep features.

The bone concentrations were usually associated with smears of charcoal in the backdirt. No artifacts can be tied to these.

The disturbed graves (see Fig. 2.6) were very disturbed. The location of several outside the Big House but within the area defined by the portico posts does give useful information on the accepted use of these spaces. Within Feature 84 the remains of an extended infant skeleton were found. These remains are discussed in chapter 7 and in Greber (1979). Mica fragments were found in the dirt above the grave, but no artifacts were found associated with the remains in 1977.

Two in situ burials were found in the outer areas of the site. Feature 56 was a deposit of cremated human remains centered at N534.4 E512.2 within a secondary mound fill (see Fig. 2.5A Section CC'). Associated with the remains were a copper plate (22.6 × 12.7 cm) (see Gadus 1979), a small copper adze (9 × 5 × 1.06 cm thick) with some fabric still intact, and a slab of sandstone. This slab was nearly rectangular with maximum dimensions 84.4 × 32.5 cm, weight 54.7 kilos. There was a small amount of pecking at the corners, but the 5 mm depth of the weathering rind suggests that this was a weathered rock before it was placed in the second mound fill (Paul Clifford, Curator of Geology, CMNH, personal communication, 1977). No evidence of a prepared grave was found in the gravelly clay matrix in which the bones were found (see Introduction to the Stratigraphy in this chapter).

The second burial found had been placed at the bottom of a pit which was under Feature 69A (see Fig. 2.5B Section FF'). This was a bundle burial which was accompanied by a cut marine shell. David Morse, whose identification and analysis of the molluscs recovered is given in chapter 8, has separately described this shell.

> The shell has been modified by the removal of the exterior spikes and trimmed along the edge; probably for use as some type of container.
>
> This shell belongs to the species *Busycon contrarium* (lightning welk) and is native to the western Atlantic coast from North Carolina to Florida. The animal lives primarily in shallow waters. Of all the species in the genus *Busycon*, this species is one of the most southerly and restricted species described in the zoological literature. Originally the shell was a whitish buff in color with violet and brown vertical streaks. The shell measures 17.5 cm in length which is average for shells of this species today, but is one of the smallest specimens known from the Edwin Harness Mound. (personal communication, 1978)

A variety of burned hardwoods as well as a fragment of *Zea mays* and other seeds were found in flotation samples taken from the earth surrounding the redeposited bones (see Table 5.3).

Feature 63 was a small pit centered 2 m south of the edge of the pit containing Feature 60, in the east wall of Backhoe Trench 4. The pit appeared to be generally oval (21 × 35 cm) and 49 cm deep. Charcoal flecks were found in the lower half of the pit within a dark reddish sandy clay matrix (5YR 4/2 yellowish red). No artifacts were found.

Feature 37 was a tap root centered at N522.75 E508.7 near the edge of Feature 1.

Radiocarbon Assays

The results of a series of radiocarbon assays on samples collected during the 1976–1977 excavations are given in Table 3.2. Two of these are not useful—DIC-801, an indicator date, and DIC-1189, which is modern. Feature 69 is an extensive deposit of dark earth and rock at the outer edges of the mound with occasional discrete concentrations of darker earth, fire cracked rock, and charcoal. Apparently a modern root intruded into this feature directly over but not into one of these darker deposits (Feature 68). DIC-1190 and 1188 are dates from deposits which are similar to Feature 68 and in similar contexts.

The state of the art in radiocarbon work has changed even since 1977, so that samples submitted today can be smaller than the suggested 10-g size with no adjustments necessary in procedures. At the time of the DIC-662 assay, 4 g of submitted charcoal resulted in a very small prepared sample (0.6869 g). For such a prepared sample size the background count used in calculating the radiocarbon years may be based on the average background count over a month rather than the average for only the two days adjacent to the day on which the sample count is taken. (Irene Stehli, Director, Dicarb Radioisotopes, Inc., personal communication, 1977). Either of the calendrical dates (200 B.C. ± 155 or 30 B.C. ± 155) will be stratigraphically in order with the remaining dates. The sample was taken from a small deposit of burned material between Feature 3 (the central main activity floor) and Feature 65 (sandy clay layer directly below Feature 3) as discussed more fully in the section on the horizontal extent of floor strata.

DIC-663 (A.D. 330 ± 65) and DIC-664 (first run A.D. 450 ± 65, second run A.D. 350 ± 65) are from pits within the Middle Section. These pits were cut into and through the main floor (Feature 3). DIC-665 (A.D. 130 ± 70) is from a post hole immediately northeast of the Northern Section. DIC-661 (A.D. 460 ± 65) is from a pit cut through the main floor west of the North Section, while DIC-802 (A.D. 320 ± 70) is from a deposit of burned material on the same floor, again, west of the Middle Section. North of the entire building, DIC-860 (A.D. 450 ± 50) comes from a similar deposit of burned material, and DIC-1187 (A.D. 180 ± 50) comes from burned hardwoods found in a small basin (Feature 62) constructed over a post hole (see Fig. 2.6 for locations).

The date for Feature 56 (DIC-1635, A.D. 750 ± 65) is again stratigraphically in order since this burial was in an outer stratum of the mound construction. The data is very close to the dates from the concentration of black earth, burned rock, and charcoal in the outer strata (DIC-1188, A.D. 810 ± 60 and DIC-1190, A.D. 840 ± 50). There can be questions concerning the retention of humic materials in bone use for radiocarbon assays; the standard procedures used for removing these younger contaminates from wood charcoal destroy bone collagen. This destruction would give too young a date. It seems reasonable to assume that bone, particularly burned bone, will not accumulate as much humic matter. The bone used for DIC-1635 was somewhat protected from water by its general location, which was within a gravelly, easily draining soil and beneath an upper strata of heavy stone. In the continuing series of dates from Ohio Hopewell sites, other samples of bone and charcoal from a single provenience are being processed. For now, this single date is in proper sequence for site stratigraphy, but it is considered tentative.

The application of corrections for the Seuss Effect does not significantly change the calendrical years at the time period of this study. For example, using the Arizona corrections (Damon, Ferguson, Long, and Wallick 1974) DIC-1635 becomes A.D. 770 ± 83. Other examples using both the Arizona and the Masca correction procedures for dates from Ohio Hopewell sites have been given previously (Greber 1976: Fig. 24). The increase in the standard deviations, which is a result of the correction, may be worth consideration. Comparative materials will be discussed in more detail in the report conclusions.

Appendix 3.1

Thin Section Analysis of Soil Samples From Edwin Harness Mound

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Sample I. (SW end of backhoe trench 7; NW wall, Feature 3C). I found no evidence of clay films in this sample and little indication of the structural aggregation which characterizes undisturbed soil materials. Vertical thin sections revealed several continuous lenses of charcoal (one very prominent), but charcoal fragments were also dispersed throughout the sample. Iron stains often, but not always, paralleled the charcoal lenses. The thin, lenticular nature of these iron stains is quite uncharacteristic of soils. Since soil will often redden when heated, perhaps these stains represent materials which have been fired. In addition to these features, I also noted several filled worm casts, but I cannot say if the activity was recent or relict.

Sample II. (As for I, but directly below Feature 3C). I saw no evidence of clay films or charcoal in either vertical or horizontal thin sections from this sample. Iron stains, however, were common. In soils, iron oxides often segregate to form mottles and concretions. In contrast, the stains in this sample usually occurred as coatings on large grains and/or rock fragments (generally siltstone). In some instances, the stains proved to be completely oxidized fragments of unknown origin. The contacts between the iron stains and the surrounding matrix were generally quite abrupt, suggesting perhaps a mixture of materials. Sample II also contained numerous worm casts and was quite porous (but not as much so as Samples I and III).

Sample III. (N522.5 E487.5, South Wall, Feature 1). Most of this sample was too loose to impregnate. However, we did manage to save one unit consisting of a siltstone fragment overlain by unconsolidated material. In thin sections, the siltstone fragment appeared to be quite fresh with no evidence of iron stains or weathering rinds. The unconsolidated material was exceedingly porous, and I saw no evidence of clay skins, iron stains, or charcoal.

In all three samples the sand grains appeared to be fresh, relatively angular and unsorted. All three samples also contained more feldspar minerals (I, III, II) than I am accustomed to seeing in soils. I doubt, however, if there is any significance to this observation. All samples were organic stained to some extent, but I saw little evidence of primary (undecomposed) root tissues. Subsurface layers in soils of this region often contain "clay skins" along root channels and the surfaces of soil aggregates due to the dispersion and downward movement of colloidal particles in waters percolating through surface layers. Translocated clay is, therefore, indicative of soil formation. I saw no evidence of translocated clay in any of the samples I examined.

Without further knowledge of the excavation site, I would conclude that these samples were taken from disturbed and/or recently deposited materials that have not been subjected to soil forming processes over a significant period of time. This statement is based on the dark color, absence of clay films, unusual porosity, charcoal content (where present), and lack of natural aggregation (soil structure) in these materials.

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4 THE CERAMIC COMPLEX

JAMES B. GRIFFIN

In this discussion of the pottery from N'omi Greber's 1976–1977 excavations of the Edwin H. Harness Mound floor, the specimens have been described and identified according to their location (see Appendix 4.1). This collection has provided information on some of the pottery which was in existence before the completion of the mound and in some instances before different sections of the mound floor had been formed. These pottery fragments are not the pottery complex of the Harness people but a very small segment of their pottery production. This mound has had a long history of excavations since at least the mid-1840s, and the pottery preserved from those excavations in the Peabody Museum of Archaeology and Ethnology, Harvard University, and the Ohio Historical Society probably represent only a small part of the specimens in the area excavated. I did not find any pottery from Harness in the British Museum Squier and Davis Collection. In addition, the ceramic material from the several segments of the Harness mound area forms a small portion of the ceramic production of the populations who lived at and near the Harness site and participated in the activities centered there. The same is true of all of the other excavated major and minor Hopewell sites in Ohio. Only the Turner site has a pottery sample which can be regarded as representative, yet that collection also presents many difficulties of interpretation. If the major Ohio Hopewell sites existed over a period of several generations with a population associated with each of some hundreds of people, their year-by-year pottery production and breakage would reasonably come to a total far in excess of that recovered from the excavations. The McGraw site is one small unit of a village presumably associated with a small Hopewell earthwork, and it produced almost ten thousand sherds. The Turner and Marriott sites had 3,806 sherds according to Prufer's (1968) analysis of the pottery. There are about 100 counted examples from the Edwin Harness floor in the present collection, although the total is somewhat greater, for, when possible, sherds belonging to a single vessel were counted as one example. Prufer's count, from the Harness mound excavations at the Peabody Museum and the Ohio Historical Society, plus the Russell Brown collection, totals some 1,157 sherds.

In the Greber collection of 98 sherds, McGraw Cordmarked is the dominant surface finish and McGraw Plain a distant second (Table 4.1). There are a few examples of the Hopewell Rim and Chillicothe Plain Rocker-stamped. There are a few examples of Turner Simple Stamped A, but none of the micaceous or other sand tempered simple ware, although there were some from the earlier collections. There are a few sherds of Turner Check Stamped, almost certainly from one vessel. The most unusual pottery is the vessel represented by limestone tempered Turner Simple Stamped A, sherds which could well have been an import. I have not provided a percentage figure for the identified "types" because they would be even more misleading than usual and can be easily obtained by anyone wishing to do so. A description of each sherd is given by provenience in Appendix 4.1. Photographs are presented in Figures 4.1–4.4.

TABLE 4.1
Summary Tabulation of Harness 1976–1977
Pottery Collection

	*Sherd Count**
McGraw Cordmarked	
Body	56
McGraw Plain	
Body	7
Rim	3
Chillicothe Plain Rocker Stamped	
Body	4
Hopewell Rim	2
Turner Simple Stamped A	
Rim	1
Body	3
Turner Check Stamped	
Body	1
	77
Unidentifiable	21
Total	98

*All pottery pieces which can be fitted together into one unit are considered to be one sherd.

In 1968, Olaf H. Prufer published an analysis of Ohio Hopewell pottery from a study he had made some years earlier. His typology will be followed in this study in order to enhance comparability. In 1943 Richard G. Morgan, Curator of Archaeology of the Ohio State Museum (now the Ohio Historical Society), and I made a similar study, which I used briefly in a report on Adena pottery (Griffin 1945), but our complete study was not published. Our sherd count is presented in Table 4.2 and is given in Prufer's terminology where possible. We did not use type names in our original study except for the identification of the highly distinctive Hopewell Rim style.

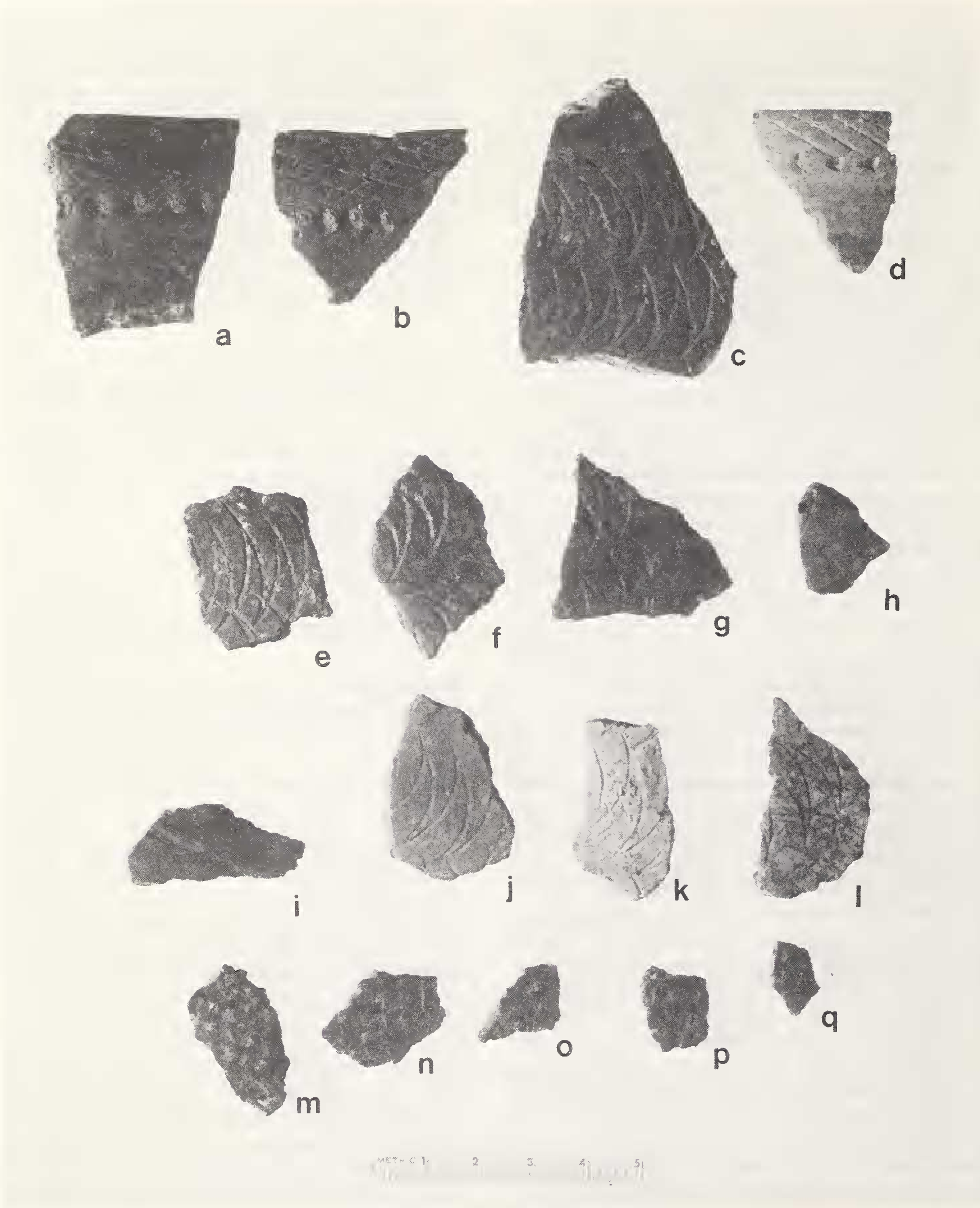

Fig. 4.1. Hopewellian and check-stamped sherds: *a*(24E), *b*(40A), and *d*(225B), Hopewell Rim; *c*(2E), *e*(24C), *f*(103E), *g*(103E), *h*(35B), *j*(24H), *k*(24G), and *l*(24B), Chillicothe Plain Rocker Stamped; *i*(103E), Hopewell sherd with incised line; *m*(290C), *n*(290C), *o*(290G), *p*(290C), and *q*(290C), thin check-stamped sherds.

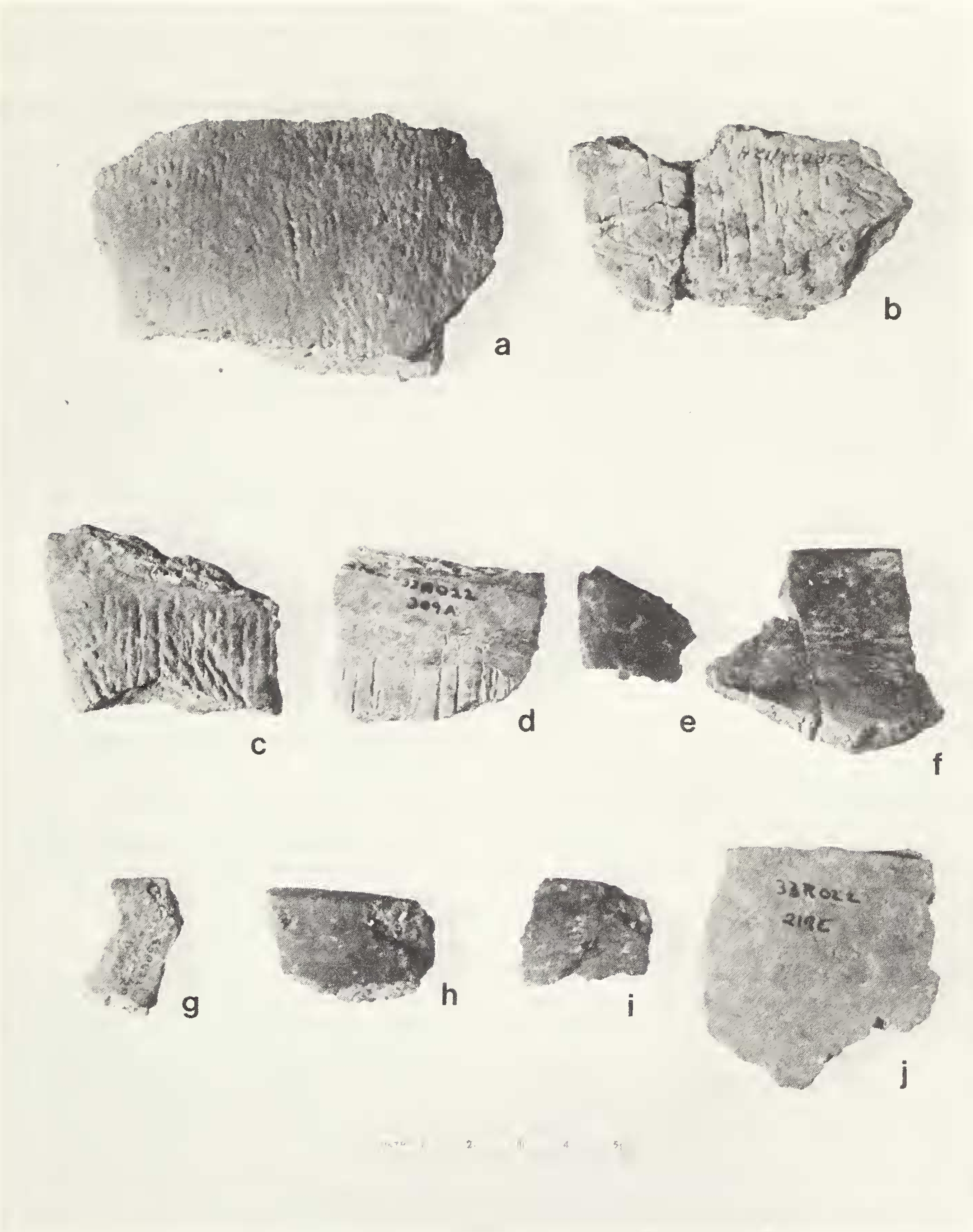

Fig. 4.2. McGraw Cordmarked, McGraw Plain, and unidentified sherds: *a*(308C), *b*(2D,12H), *c*(37A), and *d*(309A), McGraw Cordmarked; *e*(290C), *f*(138A, 231B) unidentified, *g*(2B), *h*(123), *i*(219V), and *j*(229C), McGraw Plain.

TABLE 4.2
Griffin-Morgan Pottery Count of
Ohio State Museum Harness Collection

	Sherd Count* Sub-total	Total
McGraw Cordmarked		
Body	78	
Rim	2	80
McGraw Plain		
Body	18	
Rim	7	25
Turner Check Stamped (square)		
Body (all from one Footed vessel)	23	
Turner Check Stamped (diamond)		
Body	8	
Rim	3	34
Turner Simple Stamped A		
Grit Tempered Body	6	
Limestone Tempered Body	7	
Limestone Tempered Plain Rims		
(Probably Turner Simple Stamped A)	3	16
Hopewell Rims	4	4
Chillicothe Plain Rocker Stamped		
Body	17	
Dentate Rocker Stamped		
Body	8	
Banded Dentate Rocker Stamped		
Body	1	
Zoned Dentate Rocker Stamped		
Body	2	28
Total	187	187

*All pottery pieces which can be fitted together into one unit are considered to be one sherd.

Discussion

McGraw Cordmarked

The McGraw Cordmarked vessels from Greber's Harness floor collection display some variety. On some the cord impressions are close together and on others are widely spaced. Some of the sherds were smoothed while others were not. There is also some variation in thickness, from 4 to 8 mm. There is variation in the amount and character of the grit temper. All of this variation suggests somewhat less attention to the acquisition of raw materials and vessel manufacture than was evident in sherds of the Hopewellian Series. The same can be said regarding the few McGraw Plain sherds in this collection. The McGraw Cordmarked sherds illustrated by Prufer (1968: Pl. 3) are representative of the sherds at hand.

There was a time when some archaeologists did not like to think that cordmarked pottery was a part of the Ohio Hopewell Complex. However, this pottery is a strong component of almost all known Ohio Hopewell sites except Tremper. While usually regarded as "utility" ware, which it certainly was, cordmarked pottery is also found in burial association as whole or broken vessels at Turner, Hopewell, and the Martin Mound in Coshocton County in the upper Walhonding valley (Mortine and Randles 1978), where it was the surface finish on a small tetrapod vessel.

The size of the reconstructed McGraw Cordmarked vessel 20A, of the McGraw Plain vessel 271O, and of the Turner Simple Stamped 308A suggests that they were probably whole vessels which had been used for some function shortly before they were deposited. What that function (or functions) was is not clear. The same may be said for the larger Hopewell Rims and plain rocker-stamped sherds which seem to be from the same vessel.

Hopewell Style Pottery

The Hopewell Rims and Chillicothe Plain Rocker-Stamped sherds are the only representatives of Hopewell style pottery in Greber's collection from the Harness floor. This is well-made pottery, and the slight camber of the rim I regard as indicating the vessels were made fairly early in the life-span of this complex. The reconstructed body fragment (Prufer 1968:Pl. 5a) is almost certainly part of the same vessel as my Figure 4.1c, f–h. The illustrated Hopewell Rims from the older Harness collections are not as well made and appear to have a more pronounced camber (Prufer 1968:Pl. 5b–c). The Hopewell Zoned-dentate Rocker-stamped vertical compound jar from Putnam's Harness 4 in the Peabody Museum is a unique specimen, and the large rim section from Russell Brown Mound 1, one would think, might well fit into the reconstructed area on the Peabody vessel (cf. Prufer 1968:Pl. 2 and 46). This would raise the possibility of Putnam's Mound 4 being the same mound as Frank Soday's Mound 1. Close comparison, however, by Prufer and others does not support the idea of a single vessel. There are a few other sherds of the Hopewellian Series from Harness and the Brown mounds, but my impression is that Harness does not have the variety of this ceramic complex that is found at Seip, Turner, or Mound City. The McGraw site ceramic collection is also much more varied, and I interpret its Hopewellian Series as later than the available material at Harness, Mound City, and Seip. The Harness examples should be close to the initial appearance of the Hopewellian Series in the Scioto Valley.

There is no evidence in southern Ohio for a developmental sequence of ceramic decoration which could have developed into the Hopewell Zoned decorated style. While some of the late Adena tablets in Ohio and Kentucky do present conventionalized bird designs, the only northern area where zoned stamped decoration appears is in the lower half of the Illinois Valley, where it is found apparently in a time period which precedes the Ohio Hopewell development. I have not seen a vessel or any vessel fragments from Ohio which could be correctly assigned to an Illinois source. On the other hand, such vessels from the southern half of the Illinois Valley were carried into northern Illinois, Michigan, and Wisconsin. The most logical area for the generation of the Hopewell Zoned style is in the Illinois Valley even though it is by no means a certainty.

Turner Simple Stamped B

The known distribution of Turner Simple Stamped ware recorded by Prufer is given in Table 4.3. There are no examples of Turner Simple Stamped B from Greber's excavation of the Edwin Harness Mound, nor were any identified from the collections made by earlier excavators.

There were none from Russell Brown Mounds 1 and 2. There were none reported by Prufer (1968) from Hopewell, Rockhold, Ater, or Marriott 1, which is part of the Turner site. No examples are reported from sites examined in the Scioto Valley survey (Prufer 1967) nor were any mentioned as present from the excavations of the McGraw site (Prufer et al. 1965).

At the Turner site, which, of course, has the strongest representation of Turner Simple Stamped B (see Table 4.3 and Prufer 1968:Pl. 34a and c, Pl. 40, Pl. 44d and g),

TABLE 4.3
The Occurrence of Turner Simple Stamped B in Ohio, based on Prufer (1968)

Site	*Provenience*	*Body*	*Rim*	*Tetrapod "feet"*	*Total*
Turner	Mound 1, fill	2		2	
	Mound 3, unit 2				
	unit 4	12	3		
	Mound 4, unit 1	40	4	3	
	Embankment trench	13	2		
	Cemetery, unit 6	2			
Ginther Mound		4		2	
Tremper		2	1		
Mound City	Mound 13	1*			
	General	7			
Seip	Mound 1,				
	unit 957/161	3	1	1	
	unit 957/237 & 238	1			
	unit 957/260	1			
	Mound 2, general	5		1	
	General	10	1	1	
Fort Ancient		1		4	
Fort Hill		1			
Russell Brown Md. 3		3			
		108	12	14	134

*whole vessel

Willoughby had noticed that "some of the clay used in making the smaller and more delicate vessels was tempered with sand instead of crushed stone." He mentioned a tetrapod base and ten other "feet." He also observed of the complicated stamped sherds from Turner that "sherds showing ornamental paddle marks were extremely rare. Such vessels may have been brought from the southern Appalachian region, or they may possibly have been made by captured women from the South" (Willoughby and Hooton 1922:93).

Prufer published a type description for Turner Simple Stamped B (1968), which he included in his Southeastern Series. He felt that type was imported into Ohio from the southeast, primarily because of its sand temper, which is rather rare in the Ohio Valley, and because of the narrow stamp impressions which were similar to Deptford and Mossy Oak Simple Stamped of the Georgia area. He also recognized, as had others, similarities to Paintville Simple Stamped of eastern Kentucky and to Bluff Creek Simple Stamped of northwest Alabama. The connections to the north Georgia area were thought to be particularly strong, and this area was considered as the probable source of imports into Ohio because of the presence in some of the examples of small mica flakes in the paste.

Since the publications of Prufer, excavations in southwestern North Carolina and in eastern Tennessee have produced ceramic data which serve to alter significantly interpretations of the source for Turner Simple Stamped types. In southwestern North Carolina a number of Middle Woodland sites have been excavated and identified as members of a Connestee phase. One of the sites is Garden Creek Mound No. 2. One of the ceramic types is Connestee Simple Stamped with about 300 examples. Keel (1976:110) says that "some of the sherds . . . could be classified as Turner Simple Stamped." One lower rim and upper body (Keel 1976:Pl. 16d) has annular punctates in a horizontal row at the base of a smoothed lower rim. In his discussion of trade pottery at Garden Creek, Keel identifies the same fine sand or finely ground limestone tempered pottery as Turner Simple Stamped (1976:120) and illustrates (Pl. 181) two lower rim and upper body sherds with annular punctates in the horizontal row at the base of a smoothed rim which he calls Turner Simple Stamped B. But in the description of Tennessee types he states that the 92 limestone tempered sherds are all regarded as imported frôm Tennessee, although other sources were possible. He particularly identifies the Ice House Bottom site with its Connestee material as similar to the limestone Connestee phase pottery at Garden Creek (1976:118). I am puzzled why Chapman and Keel (1979:157) regard sherds identified as Turner Simple Stamped sand tempered as probably being from Ohio, when Prufer and at least some other archaeologists have regarded this type as trade pottery from the southeast into Ohio. If the sherds illustrated by Keel (1976:Pl. 171) as Turner Simple Stamped B are typical, then there are no known examples at Edwin Harness Mound of this type. In comparing the lower rim punctates at Garden Creek with the Mound City whole vessel from Mound 13, one should note that the former punctates are annular while the latter are vertically placed hemiconical punctates. It may be doubted that any simple-stamped sherds at Garden Creek were traded from Ohio.

There are, however, Hopewell Cross-hatched rims and plain and dentate rocker-stamped sherds that might well be Ohio imports along with Ohio Flint Ridge blades. It is of special interest to note that Keel identifies the figurine specimen at Garden Creek as having been made from local paste similar to that of the Connestee pottery.

At the Ice House Bottom site in Monroe County, Tennessee on the Little Tennessee River there is a ceramic complex which includes simple-stamped pottery that has even more interesting similarities to the Ohio and North Carolina pottery with the same surface finish (Chapman 1973). The Connestee Simple Stamped sherds from this site were so named because of their striking similarity to the Garden Creek and other North Carolina sites with Connestee Series pottery. In contrast to Garden Creek, the Ice House Bottom Collection has both annular as well as angular punctates, and it is the later technique which is found at Mound City, Ohio in Mound 13. The rectangular punctates also appear on what could be Connestee Plain rims; both annular and angular punctates are also found on Connestee Brushed.

The Connestee Series pottery at Ice House Bottom constitutes about 20% of the ceramic assemblage, while the Candy Creek Series with limestone temper is, at 71%, the dominant pottery. Chapman uses the term "Bluff Creek" for the simple-stamped pottery with limestone temper following the practice initiated by Haag (1942a) in northwestern Alabama and subsequently followed by others for materials from that area. Its use in eastern Tennessee, however, is perhaps a misnomer even though there are obvious resemblances in the material from the two areas. The Ice House Bottom Bluff Creek Simple Stamped pottery does not have punctates similar to those of Connestee, and the vessel rims are primarily vertical instead of flaring, which is the dominant form on Connestee Simple Stamped. Over half of the lips of Bluff Creek are notched transversely, which does not appear on Connestee wares at this site or in Ohio. Ice House Bottom perhaps does have a simple-stamped ware which is close to the limestone tempered vessel from Harness. The rim and lip treatment at Harness is not, however, either illustrated or described by Chapman or by Gleeson (1970) from earlier excavations.

The excavations at the C and O Mounds and village site in Jonathan County, eastern Kentucky, on Levissa Fork of the Big Sandy River recovered a small number of simple-stamped sherds. However, this pottery, described as Paintsville Simple Stamped (Haag 1942b), presents some problems in interpretation for several reasons. In his description of this type Haag says that perhaps all of the sherds could be from one vessel. The large rim (Haag 1942b:Fig. 17:3) has a high flaring upper rim and annular punctates in a horizontal row at the base of the lower rim. Also an exact provenience within the two excavated mounds and village is not given. Since the flint projectile points from the site range in age from Early Archaic to perhaps Fort Ancient, and the pottery range is from an Adena complex to perhaps Fort Ancient, the attribution of Paintsville Simple Stamped is a bit difficult. There are Montgomery Incised examples and the Adena pottery complex as a whole would seem to be late. The Paintsville Simple Stamped is probably a trade vessel or vessels from eastern Tennessee. This would fit well with the presence of mica at the C and O Mounds and its probable derivation from western North Carolina. There are no specifically Hopewellian artifacts at the C and O Mounds, and if the Adena occupation there were in existence during the lifespan of Ohio Hopewell, one would expect to find some indication of such contemporaneity.

A look at one final possible southern connection indicates that the three sand tempered simple-stamped sherds illustrated in the Tunacunnhee site report from northwest Georgia (Jefferies 1976) cannot be considered close to Turner Simple Stamped B, and the one limestone tempered simple-stamped sherd is not close to Turner Simple Stamped A.

Turner Simple Stamped A

Turner Simple Stamped A sherds at Edwin Harness probably all belong to one vessel (cat. nos. 308A and 237C, plus other limestone tempered examples), except for two grit tempered specimens with a thinner body and less conspicuous lands and grooves. The sherds of the large vessel are very close in appearance to the sherds illustrated by Prufer (1968:Pl. 4b and c) from older Harness collections and from Russell Brown Mound 2, which was a part of the Harness Earthwork Complex. For a listing of the occurrence of Turner Simple Stamped A as stated by Prufer see Table 4.4.

As already mentioned, the Ice House Bottom Bluff Creek Simple Stamped illustrated examples do have an appearance similar to Turner Simple Stamped A. This is also true of other Middle Woodland sites in eastern Tennessee. At the Pittman-Alder site in Marion County, a short distance southwest of the bridge on which U.S. Highways 41, 64, and 72 cross the Tennessee River, a minority ware (58 examples) of the Middle Woodland complex is Bluff Creek (Faulkner and Graham 1965:Pl. XXIV). One of these rims has a notched lip (Faulkner and Graham 1965:59). Only two sherds from the site were identified as Benson Simple Stamped, which is the sand tempered variant name for northeastern Alabama (Heimlich 1952). On the south side of the Tennessee River opposite Pittman-Alder is the Lay site, where the continuing excavations in the Nickajack Reservoir by the University

TABLE 4.4
The Occurrence of Turner Simple Stamped A in Ohio,
based on Prufer (1968)

Site	*Provenience*	*Body*	*Rim*	*"feet"*	*lm**	*gt***	*Total*
Rockhold		1				1	
Hopewell	Mound 2	1			1		
	Mound 17			1		1	
	General	40		1	1	40	
Tremper	Mound	3				3	
Seip	Mound 1, unit 957/216	1				1	
	Mound 2	1				1	
	General	20	2			22	
Fort Ancient		12					
Turner	Mound 3, unit 4	1		1	1	1	
	Mound 4, unit 2	3			1	2	
	Mound 6	3				3	
	Mound 9, unit 2			1	1		
	Embankment	3			1	2	
Harness	Edwin Harness Mound	13			8	5	
Russell Brown	Mound 1	34	2			36	
	Mound 2	153	4			157	
	Mound 3	4				4	
		293	8	4			305

*limestone temper
**grit temper

of Tennessee uncovered more and better examples, some 919 sherds, of Bluff Creek Simple Stamped (Faulkner and Graham 1966:Pl. XIII, 37–38). They identified this type with late Early Woodland in eastern Tennessee at the time of writing the report, but a later placement in Middle Woodland is probably a better assessment.

At the Doughty site in Loudon County, Tennessee, just east of the I-75 bridge over the Tennessee River, a few sherds of a Bluff Creek Simple Stamped vessel were found (McCollough and Faulkner 1973:Pl. 21G). At the nearby Higgs site there were also a few examples (McCollough and Faulkner 1973:89–91). In the Tims Ford Reservoir along the Elk River in Franklin County, Tennessee, at the Mason site, a very minor type is Bluff Creek Simple Stamped (Faulkner 1968:78 and Pl. IXG). Other sites in this area with a Middle Woodland limestone tempered complex should also have this type as a minor component.

When working with the Norris Basin pottery in the mid 1930s, I identified simple-stamped specimens as "combed" or striated (Griffin 1938). A few such examples were found at Rock Shelter-cave Sites 3 and 12. Examples are illustrated in W. S. Webb's section of the report (Webb 1938:Pl. 13) from Saltpeter Cave (Site 3), and from Wallace Cave (Site 12) in my section of the report on Plate 152. While limestone tempered, none of the examples are similar to the Harness simple-stamped example. The sites were located in the Clinch-Powell river drainage a short distance north of Norris Dam in Campbell County, Tennessee. It is unfortunate that these shelters could not have been excavated in a manner which might have aided a recognition of successive Woodland occupations, for the pottery suggests a time span from Early Woodland certainly well into the Middle Woodland time period. Two of the open sites, the Harris Farm, Site 9, and the Cox Mound, Site 19, also had a few specimens of simple-stamped or brushed grit tempered surfaces (Griffin 1938:305).

In the lower Ohio Valley there are two sites which have simple-stamped pottery pertinent to the presence of this ceramic technique in Ohio. The Mann site in Posey County, Indiana, southeast of Mount Vernon, is a large site of some 200 acres with a strong Hopewellian component (Adams 1949; Kellar 1979, 1973). In the collection of pottery available to Adams, simple-stamped sherds were a minority type, but there are indications from later Indiana University work of areas of the site where it occurs in much larger numbers. Adams emphasizes that this type at Mann was sand tempered with small fragments of mica in the paste. He referred to similar inclusions in southeastern simple-stamped pottery, and he also noted that there were levels at the Angel Site with micaceous sands identified by soil tests (Adams 1949:59). Kellar's resume mentions the Mann site and illustrates a simple-stamped rim with closely spaced lip notches (Kellar 1973:45–46). There

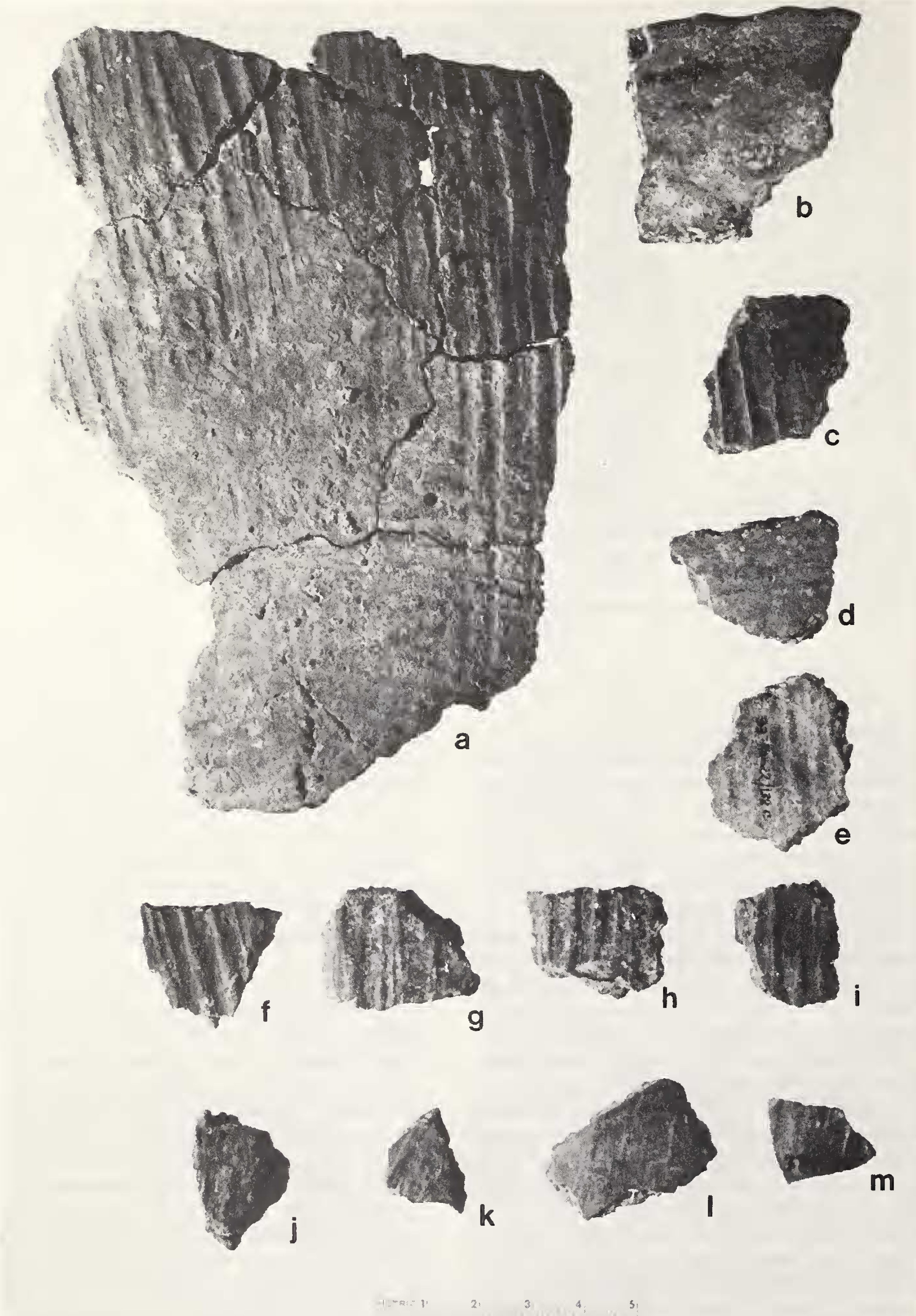

Fig. 4.3. Turner Simple Stamped and unidentified simple stamped sherds: *a*(308A), *b*(237C), *c* and *d*(309A), *e*(138C), *f*(308A), *g* and *h*(231A), *i*(231F), *j*(237C), and *k*(237E), Turner Simple Stamped A; *l* and *m*(219A), unusually thin hard simple stamped.

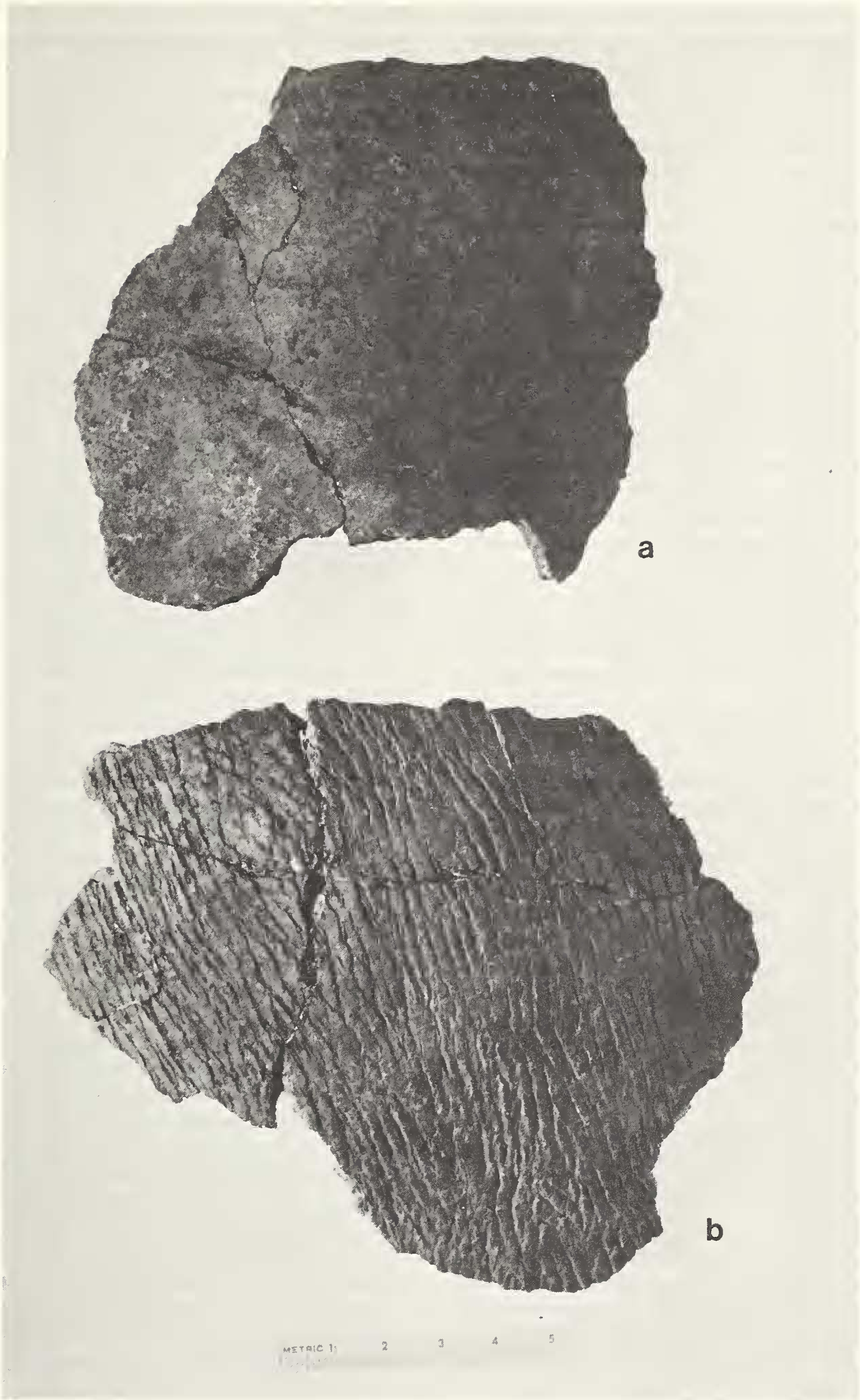

Fig. 4.4. McGraw Plain and McGraw Cordmarked sherds: *a*(271O), McGraw Plain; *b*(20A), McGraw Cordmarked.

are also complicated stamped sherds from the Mann site. One of these is illustrated by Kellar, and six presumably from there are illustrated by Adams (1949:Pl. V).

In the Rutherford Mound in Hardin County, Illinois, overlooking the Saline and Ohio river bottoms, M. L. Fowler (1957) excavated a small simple-stamped vessel with tetrapods in association with Burial 6, which was placed with four other burials in the primary mound about 2.5 feet above the mound floor. These burials may or may not be significantly later than the effigy platform pipes, panpipes, copper earspools, and axes placed with burials on the mound floor. While there is a Carbon-14 date of about A.D. 432± 100, I believe it is too late for the Hopewell items and for the tetrapod vessel, for this material should date close to A.D. 100.

While the stamped paddle pottery seems to disappear after the Hopewell occupation in southern Ohio, such is not the case in the lower Wabash Valley. The survey report for the Illinois side of the river by H. D. Winters (1963) shows simple-stamped pottery which he has named Embarrass (locally pronounced "Ambraw") Simple Stamped. Some of the lips are notched. This type is associated with the LaMotte-Allison complex, which I believe straddles the rather arbitrary dividing line between late Middle Woodland and early Late Woodland. Check-stamped pottery is also associated with this complex.

Check-stamped

There are five body sherds with check-stamped impressions from Harness. Prufer has called the Ohio Hopewell examples Turner Check Stamped and placed them in his Southeastern Series. Some of the Ohio examples may really be trade vessels from the east Tennessee area. The Harness examples of Greber's collection, however, are blackened on both surfaces, and their paste characteristics are like the paste of the Hopewell Rims and Chillicothe Plain Rocker-stamped Harness sherds and are probably the product of Harness potters. I do not believe I have seen very many similar check-stamped sherds from other Ohio Hopewell sites and Prufer (1968) does not illustrate any. I have not seen such sherds from southeastern collections or in illustrations from that area. The concept of check-stamping did, however, almost certainly reach southern Ohio from the southeast, probably the east Tennessee area. I think that the absence of check-stamping on most of the Adena pottery in Kentucky, Ohio, and adjoining areas probably has temporal significance. One limestone tempered check-stamped sherd was at the late Adena Wright mounds (Haag 1940:81) and one grit tempered sherd from Jo9 (Haag 1942b:348). Haag illustrates two check-stamped sherds from Wright Mound 6 (1940:Pl. 52n and r).

Prufer has identified a diamond check-stamped in his Harness site study, a Turner Check Stamped at Russell Brown Mound 1, and two of the same type at Russell Brown 3. None of those are illustrated from the Brown mounds but the Harness example is illustrated in Plate 4. Such sherds also occur in very small frequencies at Rockhold; at Seip General and Seip Mound 2 General; at Fort Hill; and at Turner Mounds 1, 3, 4, 7, and 9, the Great Embankment, and the cemetery area. The lower rim and body sherd from Turner Mound 4 is illustrated by Prufer (1968:Pl. 39a) and has a horizontal incised line separating the plain lower rim from the stamped body. The sherd is placed sideways on the plate instead of vertically. It has stamp size and black outer surface similar to the five specimens from the Edwin Harness floor (cat. no. 290C). Prufer does not report check-stamped sherds from Hopewell, Ater, Ginther, Mound City, Tremper, Fort Ancient, or the Marriott Mound at the Turner site. There are certainly more sherds from the Turner excavations than from all the other Ohio Hopewell sites where such sherds are known to occur. This is probably in part because of the much larger amount of pottery excavated and preserved from the Turner site. At Turner, check-stamped sherds are found on both grit and limestone tempered paste, the latter being most common. One sherd from Seip General is limestone tempered, and the diamond check-stamped sherd from Seip 2 General is sand tempered. The few other sherds are grit tempered.

The check-stamped presence in Hopewell is even more difficult to pin down in terms of its derivation than was the simple-stamped technique. None of the Ohio examples are very large and very few have rims which might be helpful. In eastern Tennessee, check-stamped is found along with simple-stamped on many of the sites with Middle Woodland components. This is probably the area from which the check-stamped vessels or the concept was moved north into southern Ohio. One large rim and body sherd from the Turner cemetery is identified by Prufer (1968:Pl. 45a) as an Untyped Complicated Stamped because it has large squares with a raised central circular area, which is unusual. Another location where such a pattern appears in the southeast is near Savannah, Georgia. Quite a few years ago J. C. Caldwell sent me illustrations of sherds that he identified as the Oemler complex, which had a limited distribution in the coastal area. Such material is not mentioned or illustrated in the Waring papers, although the Oemler site is identified on maps (Williams 1968:Figs. 35 and 37). The Oemler style of stamping is regarded by some archaeologists to date about 600 B.C. (DePratter 1979). A connection between the Turner and Oemler examples is not implied, for they are quite different in appearance, and the vessel shape at Turner with its fairly high rim which is angled outward is quite different in shape from any of the Oemler complex. Three sherds with this design are known from the Mann site in southwest Indiana (Kellar 1979:103). The diamond variant of the check-stamp is uncommon both in Ohio Hopewell and in the southeast but does occur at the Yearwood site in southwestern Tennessee (Butler 1979:

Fig. 20.9). The ones at Harness in the older collections and other Ohio examples are probably local products.

Complicated-stamped

While there are no complicated-stamped sherds at Harness, they do occur at Seip and Turner particularly. The illustrated examples appear to have their closest connections to Early to Middle Swift Creek types. Sites in eastern Tennessee of the Middle Woodland period which have check-, complicated-, and simple-stamping, with evidence of trade sherds and other items probably made in Ohio, are the most likely candidates to be on the right temporal level to have furnished those pottery specimens or concepts to Ohio Hopewell.

As mentioned, complicated-stamped pottery occurs at the Mann site (Kellar 1979:103). One rim illustrated by Adams (1949:Pl. V) has closely spaced lip notches while a second has an undulating appearance. Adams expressed the opinion that these specimens—because of their grit, sand, and clay temper designs and notched lips—more closely resembled Swift Creek pottery in Georgia than the geographically closer Pickwick Complicated Stamped of northern Alabama. This was also my reaction when I saw them in the early 1940s (Griffin 1946:71) and still is.

Rocker-stamped

The presence of rocker-stamped pottery in the Greber collection or in the earlier collections from the Edwin Harness site is not easily explained. The Hopewell Zoned Plain Rocker-stamped vertical compound vessel, reconstructed from sherds obtained by Putman from his excavations, might be regarded as having been deposited as a whole vessel. The plain rocker-stamped sherd illustrated by Mills (1907:Fig. 36) is on the right hand side of the four glued sherds illustrated by Prufer (1968:Pl. 5a), and these appear to be part of those in the Greber collection. The latter specimens were relatively close together in the northwest part of the southern sub-rectangular structure. It is also possible that Mills's (1907:Fig. 37) and Prufer's (1968:Pl. 4b) are from the same vessel as Greber's check-stamped sherds (cat. no. 290C) from Feature 66, which is also in the southern sub-rectangular structure. Notes from the Griffin-Morgan study state that the check-stamped sherds from the Mills Harness collection seem to be from one footed or tetrapod vessel.

Conclusions

This brief discussion and survey of the distribution of stamped wares, particularly simple-stamped, indicates the general area of possible southeastern connection for Ohio Hopewell. At present, eastern Tennessee and southwestern North Carolina are the more probable loci for the derivation of simple-stamped and check-stamped vessels into the central Ohio Valley or for the manufacturing techniques which produced them. At some of the sites mentioned there are pottery types and other artifacts from Ohio. Some part of this interarea diffusion probably represents the activity of individuals from southern Ohio who participated in the acquisition of mica from North Carolina and in the acquisition of marine shell and other items from the Florida Gulf Coast. A more intensive effort should be made to identify other sites in northeastern Tennessee, along the headwaters of the tributaries of the Tennessee, and in eastern Kentucky and West Virginia, which have occupations of the Middle Woodland periods. Whether this proposed interarea traffic took place along streams or by trails is not definitely known. Probably both were used.

The temporal span of both Ohio Hopewell and Middle Woodland sites in the eastern Tennessee area is not too well known, and it is difficult or impossible to be precise in terms of calendar or Carbon-14 years about when these contacts took place. Given the probable time span of each, of some 400 years or more, the known amount of reasonably identifiable trade goods is not very great, nor can we yet be very specific about which Ohio sites were prime movers of these goods. Such may come with a refinement of identification techniques of the clays and tempering material.

Appendix 4.1

Description and Sherd Count
Harness Mound Pottery—Season 1976

Field Cat. No.

1 Surface
Small McGraw Cordmarked specimen with cords closely spaced and smoothed. Thickness 4.5 mm. 1

2B, 2D, 2E, 2J, N535 E492.5 Disturbed area

2B Small vertical rim sherd of McGraw Plain with narrowed flattened lip 3 mm wide. Slight protrusion on outer upper rim folded or smoothed down 3 mm on that surface. Consequently that area has a thickness of 5 mm as does the lower rim (Fig. 4.2g). 1

Small McGraw Cordmarked body sherds one of which is 6 mm and the other 4 mm thick. 2

2D McGraw Cordmarked body sherds composed of 3 fragments which fit together and vary in thickness from 5 to 12 mm (Fig. 4.2b). 1

2E McGraw Plain, probably a rim section, 5 mm thick. 1

An upper shoulder area section of Chillicothe Plain Rocker-stamp which is placed below a shallow horizontal line 3 mm wide which delimits the smoothed horizontal rim band from the decorated area on the body. The Rocker-stamp impressions are convex to the right. They are arranged in 2 visible horizontal rows each 1.9 cm high. Both the inner and outer surface have been smoothed. On the outer surface this took place after the design application. Both surfaces are black, possibly from having been fired in a reducing atmosphere. Lower rim 7 mm and body from 7 to 5.5 mm thick (Fig. 4.1c). 1

2J McGraw Cordmarked body sherd with some large tempering particles 3.5 mm thick extending from the inner to outer surfaces. Thickness 4 to 5 mm. 1

11C, N535 E495, Feature 4
Small sherdlets of McGraw Cordmarked. Perhaps from the same vessel. Thickness 4.5 mm. 4

20A, N537.5 E492.5, Feature 13, (in situ) I.S.
21 fragments of the side wall of a McGraw Cordmarked vessel which was in 28 fragments when received. Thickness 3 to 5 mm (Fig. 4.4b). 1

McGraw Cordmarked sherd with same field number but perhaps a different vessel or near base of vessel listed above. Thickness 7 mm. 1

24B, 24C, 24D, 24E, 24G, 24H, N535 E492.5, Feature 89, I.S.
24B Outer wall fragment McGraw Cordmarked. 1

Chillicothe Plain Rocker Stamped carelessly executed on body fragment with tan outer surface. Probably not from same vessel as 2E. Thickness 5.5 mm (Fig. 4.1l). 1

24C McGraw Cordmarked. Thickness 3.5 mm. 1

Chillicothe Plain Rocker Stamped with same execution and size of rocker stamping as 2E but only 4.5 mm thick. Same dark brown to black surfaces but probably not from same vessel. Fine grit temper (Fig. 4.1e). 1

24D McGraw Cordmarked 5 mm thick. 1

24E McGraw Cordmarked with coarse grit temper of whitish crushed temper which is not limestone. Very friable and 5.5 mm thick. 1

Well-made Hopewell rim. The fine incised cross-hatched upper band is 1.6 cm high. The horizontal row of hemiconical punctates below the cross-hatching are 5 to 9 mm long and 4 mm high. The lower rim area is well smoothed. Inner and outer surfaces are black. There is a slight camber to the rim caused by a shallow channel on the upper inner rim. The lip is rounded and 4 to 5 mm wide while both the upper and lower rim are 7 mm thick. This rim could be from the same vessel as 2E because color, paste, and thickness are similar (Fig. 4.1a). 1

24G Chillicothe Plain Rocker Stamped with light tan outer surface. Swing of rocker is 2.3 cm high. Thickness 5 mm (Fig. 4.1k). 1

24H Chillicothe Plain Rocker Stamped with darker tan outer surface. Swing of rocker is 2.3 cm high. Thickness 4 mm. Does not appear to be from same vessel as 24G and neither are from same vessel as 2E (Fig. 4.1j). 1

31B, N535 E495 Disturbed
McGraw Cordmarked sherdlets 3 mm thick. 1

35B, N535 E492.5, Disturbed
Chillicothe Plain Rocker Stamped. Too small to measure the rocker swing. The lines are markedly narrower than those of 2E and it is 5 mm thick (Fig. 4.1h). 1

37A, N535 E492.5, PM 16, I.S.
McGraw Cordmarked upper body and lower part of rim which may have been smoothed. It is 6 mm thick and has relatively fine grit temper (Fig. 4.2c). 1

40A, N535 E492.5, PM 14, I.S.
40A Hopewell rim section with same features as 24G and is almost certainly from same vessel. The hemiconical punctates are more closely spaced but otherwise appearance of all visible features is almost identical (Fig. 4.1b). 1

44C, N535 E492.5, Feature 19, (pit) I.S.
McGraw Cordmarked 4 mm thick. 1

Three sherdlets probably McGraw Cordmarked, one of which is 5 mm thick. These probably from the same vessel. 1

McGraw Cordmarked 5 mm thick. 1

66A, N548.5 E507.5, Feature 23
Two McGraw Cordmarked sherdlets 4.5 mm thick. 1

McGraw Cordmarked sherds 4.5 mm thick. 1

103B, 103C, 103D, N532.5 E495 Redeposited-disturbed
103B Three McGraw Cordmarked sherds 4.5 mm thick probably from same vessel. 1

McGraw Cordmarked lower rim and upper body 5 mm thick. 1

103C McGraw Cordmarked sherd. 1

103D McGraw Plain sherd 7 mm thick. 1

McGraw Plain sherd 4 mm thick. 1

103E Two Chillicothe Plain Rocker Stamped sherds with 1.8 cm high vertical swing, of very similar color and finish as 24E but are 4.5 to 5 mm thick. They could be from same vessel as 24G but from a different section of the body (Fig. 4.1f,g). 1

One fine paste Hopewell sherd with horizontal (?) incised line 2 mm wide. Sherd is 4 mm thick (Fig. 4.1i). 1

104 Bulldozed area N520 E500
Small McGraw Cordmarked sherds 5 mm thick. Could be from same vessel but impossible to say for certain. 4

107 Bulldozed area
McGraw Cordmarked with well-smoothed exterior 5.5 mm thick. 1

123 Surface
McGraw Cordmarked 7 mm thick. 1

McGraw Plain rim with flattened lip 6.5 mm wide and slight outer slope. Whitish grit temper. Rim is 7 mm thick (Fig. 4.2h). 1

138A, N522.5 E495 Redeposited-disturbed
Small lower rim and upper body sherd 7 mm thick. Is from same vessel as 231B and is glued to that rim (Fig. 4.2f). 1

138C, N522.5 E495 Redeposited-disturbed
Probably Turner Simple Stamped A, 7 mm thick (Fig. 4.3e). 1

155, N557.5 E495 in mound floor
McGraw Cordmarked 5 mm thick. 1

183A, 183B, 183C, 183F, and 183G, N525 E495, Feature 30 (pit)
Some 24 sherdlets of 183B, six of 183A, seven of 183C, six of 183E, seventeen of 183F, and three of 183G are McGraw Cordmarked. While it is not certain that all of these are from one vessel, the 183A, a 183B, and a 183C fit together, as do a 183C and 183E sherd. If there are at least two vessels, the larger sherds belong to a vessel with 8 mm side walls and another vessel is represented by side walls 4 mm thick. 2

One baked clay fragment of 183C does not appear to be from a vessel, or figurine, and is unidentified.

191A, N532.5 E495, PM 84, I.S.
Inner section of McGraw Cordmarked or Plain, probably the former. 1

217, Provenience lost
This small sherd is either McGraw Plain or Cordmarked but it cannot be identified with any certainty. 1

Harness Mound Pottery—Season 1977

219A, Surface
Turner Simple Stamped in Prufer's (1968) terminology. This thin, hard, fine grit tempered sherd is certainly not the same vessel as 308A. Neither have sand or micaceous sand temper. The inclusion of either in a "Southeastern Series" would be a mistake. Thickness 4.5 mm (Fig. 4.3l and m). 1

219E, Surface Backhoe Trench 1 backdirt pile
Fairly large smoothed over McGraw Cordmarked 6 to 7 mm thick. 1

219U, Surface
Two small McGraw Cordmarked sherds glued together. They are 4 mm thick. 1

219V, Surface
A McGraw Cordmarked sherd 5.5 mm thick. 1

A McGraw Plain small rim with a narrowed and rounded lip 4 mm wide while the rim is 7.5 mm thick (Fig. 4.2i). 1

221G, N530 E507.5, Bulldozed area
One sherd 8.5 mm thick called here McGraw Plain. 1

225B, N540 E507.5, Redeposited
Small Hopewell rim with reddish tan interior and exterior color. The lip, narrowed and rounded, slopes inward and is 3 mm wide. The incised cross hatching is widely spaced and is 7.5 mm high. The hemiconical punctates are 3 mm long and 3 mm wide. They are spaced 3.5 to 4 mm apart. The upper and lower rim thickness is 4.5 to 5 mm (Fig. 4.1d). 1

229C, N550 E507.5, Redeposited
Lower rim and upper body sherd of McGraw Plain. It is 8 mm thick and grit tempered (Fig. 4.2j). 1

230N, N522.5 E497.5
Two small McGraw Cordmarked sherds glued together. They are 4 mm thick. 1

231A, 231B, 231F, 237C, 237E, N522.5 E490, Disturbed area

231A Two small Turner Simple Stamped A sherds with limestone temper. They are probably part of 308A. The stamp depressions are 2 to 3 mm wide and the lands are 1 to 2 mm wide (Fig. 4.3g, h). 1

231B A rim sherd of unidentified type with a plain upper body and a horizontally brushed, wiped, or simple stamped outer rim. The lip is narrowed and rounded and is 4.5 mm wide. The rim and body are 8.5 to 9.5 mm thick. It is grit tempered. 1

231F Turner Simple Stamped A body sherd with limestone temper. Probably same vessel as 308A. Thickness 7.5 mm (Fig. 4.3i). 1

237C Rim sherd and upper body of Turner Simple Stamped A. Is very probably same vessel as 308A. The rim has a slight flare or outer slope and is 7 mm thick. The lip slopes to the interior and has shallow depressions caused by thumb (?) impressions while the clay was still soft. This vessel is a real stranger in the Harness ceramic assemblage because of the temper (Fig. 4.3b, j). 1

Turner Simple Stamped A body sherd from same vessel. 1

237E Turner Simple Stamped A body sherd from same vessel (Fig. 4.3k). 1

264E, N530 E485
McGraw Cordmarked 6.5 mm thick. 1

271O, N552 E500, PM 162, I.S.
A large McGraw Plain body of 4 glued fragments 5 mm thick (Fig. 4.4a). 1

290C, 290G, N525 E502.5, Feature 66

290C Has 8 fragments of a thin checked-stamped vessel. These sherds are thin, 3 mm, grit tempered and are not trade material from the Southeast as far as I can see. Both inner and outer surfaces are black and smoothed (Fig. 4.1m–g). 1

Has 1 lower rim section of McGraw Plain. It is well smoothed on outer and inner surfaces, which are black. The sherd is 9 mm thick (Fig. 4.2e). 1

290G Has 4 sherds of McGraw Cordmarked. They do not seem to be from the same vessel. 4

291A, N530 E502.5 on top of PM 160
A small sherd of McGraw Plain 4 mm thick. 1

295G, N530 E502.5 on top of PM 160
Two sherds of probably same McGraw Cordmarked vessel. 1

Two other unidentified fragments. 2

295L, N530 E502.5, PM 160, I.S.
Two sherds of which one has two glued pieces. The glued sherds are from a lower rim section of perhaps McGraw Plain and are 8.5 mm thick. The second is a small fragment of probably McGraw Cordmarked and is 5 mm thick. 2

297G, N535 E509, partially disturbed
One McGraw Plain 5 mm thick body sherd. 1

One McGraw Cordmarked 4.5 mm thick. 1

300A, 300B, N525 E509, Redeposited
Both of the two sherds are very small. They may be McGraw Plain or Cordmarked and are 3.5 mm thick. 2

308A, N524 E485, PM 270, I.S.
Large body sherd of Turner Simple Stamped A glued together from 9 sherds, and one other sherd. This vessel has limestone temper of medium size crushed fragments. There are fragments of this vessel from other localities, and the vessel seems to be the only limestone tempered one in this collection. The paddle depressions are about 3 mm wide and the bands are 2 to 1 mm wide. Thickness is 6 to 7 mm (Fig. 4.3a, f). 1

308C, N524 E485 PM 268
4 body sherds McGraw Cordmarked glued together, reddish to tan in color, may belong to one vessel, but uncertain. Thickness 6 to 9 mm. 1

309A, N524 E492.5 burned area on mound floor, partly disturbed.
A lower rim (McGraw Plain) and upper body (McGraw Cordmarked) 7 mm thick. Well fired tan in color (Fig. 4.2d). 1

Two body sherds of Turner Simple Stamped A from same limestone tempered vessel as 308A, 8 mm thick (Fig. 4.3c, d). 1

504B, N527.5 E495, PM 410, I.S.
A McGraw Cordmarked sherd 4.5 mm thick. 1

700B, N522.5 E495, Redeposited
McGraw Cordmarked sherd 5 mm thick. 1

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5 PLANT REMAINS

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The Edwin Harness Mound, located in the Scioto River valley near Chillicothe, Ohio, has long been recognized as a major Hopewell burial mound. While several excavations were conducted at the site in the past, many questions regarding the mound stratigraphy and submound features, structures, and activity areas remained unanswered. Therefore, when unexcavated portions of this mound were recently threatened by cultivation, salvage excavations were conducted under the direction of Dr. N'omi Greber of the Cleveland Museum of Natural History. During the excavations, plant remains were collected and submitted to the Ethnobotanical Laboratory of the University of Michigan Museum of Anthropology for identification and interpretation. These samples were returned to the Cleveland Museum of Natural History after analysis for curation and storage.

Nature of the Samples

Plant remains recovered from the Edwin Harness Mound included primarily charcoal samples and flotation samples from post molds and features. In addition, 2 pieces of fabric, 1 seed, and a modern corn cob (*Zea mays*) were collected during excavation.

Flotation was conducted in the field and at the Cleveland Museum of Natural History using a SMAP-type flotation system (Watson 1976). The light fraction was collected in 4 mm, 2 mm, and .5 mm screens.

Analytical Techniques

The samples of plant material were examined microscopically under magnifications ranging from 10 to 30×. Carbonized seeds were separated from the samples and identifications were attempted with the aid of seed manuals (Martin and Barkley 1961; Delorit 1970) and the comparative collections of the Ethnobotanical Laboratory. Charcoal was identified by examining a transverse section microscopically with the assistance of wood manuals (Brown 1928; Panshin and de Zeeuw 1970) and comparative wood samples. A subsample of 20 pieces of charcoal was selected for identification from samples containing large amounts of charcoal.

Because the size and shape of a piece of charcoal affects its identifiability, these factors influence the selection of charcoal pieces for identification. Therefore, the charcoal selected cannot be considered an unbiased subsample. However, care was taken to select charcoal pieces of many shapes and sizes, so the charcoal subsamples should be fairly representative of the charcoal from each sample as a whole.

Charcoal from Posts

The submound deposits from the Edwin Harness Mound included several adjacent structures outlined by post molds. Charcoal was recovered from a number of these post molds (Table 5.1).

Hickory (*Carya*) was the most common timber used for construction. Out of a total of 33 post samples examined, 25 (76%) contained hickory. All of the identified hickory pieces had annual rings which showed an even, concentric growth pattern. This suggests that these trees were growing in a location that was not stressful at the time the rings were formed. All were saplings or young trees rather than limbs or split sections from larger, more mature trees.

In 4 of the post samples, a few pieces of non-hickory charcoal types were found in addition to hickory. These included oak (*Quercus*; Post 142), the more specific white oak group (Posts 151 and 155), and maple (*Acer*; Post 146). These may have been from wooden wedges used to tighten the post in place, or alternatively contamination from the general fill or the charred remains of trees which once grew on the site. A woven bast fiber textile was found at the base of Post 131 and may have served a similar purpose.

Eight post samples did not contain hickory charcoal. The white oak group was present in 6 of these samples (Posts 85, 122, 132, 198, 213), 1 post was elm (*Ulmus*; Post 138), and another was an unidentifiable diffuse porous wood type (Post 128).

The posts from the circular structure at the south end of the mound are interesting. The 2 samples from Post 216 actually contained charcoal of 5 tree types: hickory, chestnut (*Castanea*), honey locust (*Gleditsia*), walnut (*Juglans*), and pine (*Pinus*). This suggests that this feature was not a post. Two of the remaining 3 posts that were identified were white oak group, and it might be significant that they were located opposite each other on the east and west sides of the structure.

Charcoal from Features

Plant remains were recovered from a number of different types of features at the Edwin Harness Mound. These included mound loading (Feature 43); a large ring of cobbles which encircled the other submound deposits (Feature 1); a burned area at the center of the middle structure

TABLE 5.1
Charred Posts from the Edwin Harness Mound Floor
(Percentages based on a total of 20 identified pieces)

Location	*Post Number*	*Field Catalogue Number*	Acer *maple*	Carya *hickory*	Castanea *chestnut*	Gleditsia *honey locust*	Juglans *walnut*	Pinus *pine*	Quercus *oak*	Quercus *oak-white group*	Ulmus *elm*	*Diffuse porous*
Possible fence around perimeter	116	F6		x								
	119	F4		x								
	125	F9		x								
	140	F40		x								
	151	F76		x						x		
Circular structure, south end	85	192A								x		
	142	230M		x					x			
	198	CCD61								x		
	216	CCD64		50		20	30					
		F99		65	5	10	10	10				
Middle rectangular structure	127	F31		x								
	128	F28										x*
	131**	F27		x								
		F32		x								
	157	F85		x								
	230	F97		x								
Northern rectangular structure	122	F8								x		
	126	F19		x								
	132	F48								x		
	134	F39		x								
	136	F26		x								
	138	F42									x	
	141	F65		x								
	146	F66	x	x								
	152	F75		x								
	154	F74		x								
	155	F77		x						x		
	162	F84		x								
	163	F82		x								
	213	F93								x		
		F95								x		
Eastern structure	121	F5		x								
	215	F98		x								

x = present
*charcoal minute and fragile
**woven blast fiber fabric present

TABLE 5.2
Charcoal from the Edwin Harness Mound Features
(Percentages based on a total of 20 identified pieces)

Feature Number	*Field Catalogue Number*	Acer *maple*	Carya *hickory*	Castanea *chestnut*	Fagus *beech*	Fraxinus *ash*	Gleditsia *honey locust*	Juglans *walnut*	Pinus *pine*	Quercus *oak-red group*	Quercus *oak-white group*	*Charcoal flecks*	*"Sap"*
1	F10A											x	
	F23											x	
17	F70AA	x	x		x					x			
33	F25		67					33					
	F36		100										
	F41											x	
	F43		100										
	F44										100		
	F45											x	
	F57		40								60		
	F70		50					10			40		
	CCD19A	5	5			15					75		
36	F1A		25						75				
43	F29		100										x
45	F53		100										
	F60		10							30	60		x
	F64A		30							10	60		
	F64B		80								20		x
	F64C		30	5						5	60		
	F64D		30							30	40		
	F69	5	50							15	30		x
	F69B		67								33		
	F69C		60								40		x
46	F47	20	40								40		
	F62		45	5			15				35		
49	F46*		90								10		
	F49*									30	70		
50	F58		100										
52	F56*										100		
53	F61		100										
	F63									70	30		
54	F79											x	
60	F71A		75	5	5			5		5	5		
62	F83		30						10		60		
65	F35		100										
**	F20											x	

x = present
*directly over feature in loading
**N560 E507.5, mound loading

on the mound floor (Feature 36); a depression in the main mound floor (Feature 54); strata under the main mound floor (Features 33, 50, and 65); a bundle burial (Feature 60); a large pit located outside of the submound structures (Feature 17); a small oval-shaped basin found just north of the submound structures (Feature 62); and various strata located outside of the submound structures. The latter included burned material on clay floors (Features 45, 46, and 53); burned soil (Feature 49); and mica pieces in a dark stained area (Feature 52).

Charcoal identifications from botanical samples collected from features are presented in Table 5.2. Ten tree types were represented, including such types as beech (*Fagus*) and maple, which are found today in riverbottom and lower slope communities, as well as such trees as chestnut and pine, which are primarily found on the upper slopes (Gordon 1969). Additional tree types identified included hickory, ash (*Fraxinus*), honey locust, walnut, red oak group, and white oak group.

As with the post samples, hickory and white oak group were the most common charcoal types in the feature samples. Of the 35 flotation samples and 1 charcoal sample from features, 26 (72%) contained hickory and 20 (56%) contained white oak group charcoal. This suggests that some of the charcoal incorporated in the feature deposits could have come from the remnants of burned hickory and white oak group construction timbers. However, the charcoal in features could also be the remnants of wood used as fuel. Hickory and white oak group wood both burn with a hot, clean flame and may have been selected for use as fuel because of their burning properties.

Interestingly, the burned area in the middle structure on the main mound floor (Feature 36) contained 75% pine charcoal. Pine has very different heating properties than oak and hickory, producing a hot fire more quickly than the hardwoods. The bundle burial deposit (Feature 60) contained the greatest diversity of charcoal types including hickory, chestnut, beech, walnut, white oak group, and red oak group.

Seeds from the Edwin Harness Mound

Carbonized seeds were recovered from 10 of the feature flotation samples, from 2 of the post samples (1 seed was recovered during excavation), and from a charcoal sample used for C-14 dating (Table 5.3).

Corn kernels were the only type of domesticated plant material recovered from the site. Unambiguous kernel fragments were recovered from Feature 45 and Feature 60, the bundle burial. The identification of grains from Feature 65 is more questionable because of their fragmentary state. One uncarbonized, 12-row cob fragment of a modern variety was found in Backhoe Trench 4 during excavation. The presence of corn with the bundle burial suggests the use of corn as a mortuary offering and hints at the ritual significance of corn in Hopewell culture.

Carbonized seeds from wild plants recovered at the site included goosefoot (*Chenopodium*), knotweed (*Polygonum*), spurge (*Euphorbia*), and grass (Gramineae). The seeds of the goosefoot and knotweed are difficult to interpret. These ruderal plants grow prolifically on disturbed or abandoned sites, and their seeds could be accidental inclusions resulting from unintentional dispersal of seeds from plants growing nearby. Alternatively, these seeds could have been carbonized through the use of dried weeds as kindling. However, both goosefoot and knotweed seeds are edible. Large quantities of these seeds were recovered from Middle Woodland deposits at the Scovill site in Illinois, indicating that they were used as food in that area (Munson et al. 1971). In most of the samples from the Edwin Harness Mound the low counts of goosefoot and knotweed seeds suggest that they may well have been accidental inclusions in the deposits. However, the moderate number of goosefoot and knotweed seeds along with corn in the bundle burial deposit hint at the economic use of these seeds. Spurge seeds were also recovered from the Feature 60 burial as well as from Feature 17, although these seeds are not known to be edible. The presence of carbonized grass seeds and culms could also have been due to accidental inclusion in the archaeological record. Alternatively, these plant remains could have come from thatching on the submound structures.

Hundreds of an unknown, egg-shaped seed type were recovered from Features 17 and 60, and much smaller numbers of these seeds were found in Features 33 and 65. A sample of 25 of these seeds from Feature 60 had an average size of 1.7 mm × 1.2 mm. In addition, other unidentified seeds were found in many of the samples.

No carbonized nutshell fragments were recovered from the site, even though hickory, oak, and walnut charcoal was present in the post and feature samples. This is quite unlike the reported plant remains from several other Ohio Hopewell sites (Ford 1979:235) and probably reflects the special purpose of the Edwin Harness Mound. The only identified edible tree products from this site were 2 plum pits (*Prunus americana*).

Uncarbonized, modern weed seeds were also recovered in the archaeological deposits from the mound. These included not only modern goosefoot, knotweed, and grass seeds, but also the grass genus *Digitaria*, purslane (*Portulaca*), campion (*Silene*), and blueberry (*Vaccinium*), which did not occur archaeologically.

Other items recovered from the botanical samples were bone and snail shells (Table 5.3). A piece of bone from Feature 60 was identified as possibly human. The identifiable snail shells from the samples were *Hawaiia minuscula* (Amy Shraden Van Devender, Museum of Zoology, Univ. of Michigan, personal communication, 1978). This species prefers a moist, floodplain habitat, but it could be found elsewhere as well (LaRocque 1970:639).

TABLE 5.3
Carbonized Seeds and Faunal Remains from the Edwin Harness Mound Botanical Samples
(counts include half to complete seeds)

		Carbonized Seeds								*Fauna*	
Provenience	*Sample Number*	Chenopodium *goosefoot*	Euphorbia *spurge*	*Gramineae grass*	Polygonum *knotweed*	Prunus americana *plum*	Zea mays (*kernel*) *corn*	*Unknown (egg shaped)*	*Unident.*	*Bone*	*Snail*
Post 141	F65				1						
Post 142	230M					1 frag					
Fea. 17	F70AA	4+	3	1	8			155+	34+		x
Fea. 33	CCD19A			5+							
	F25								1		
	F36			1+(cf)					1		
	F70	22+		7(cf)				3	56	x	x
Fea. 45	F64C	1			3		1 frag				
	F69C			3 culms						x	
Fea. 46	F62					1				x	
Fea. 52	F56				1						
Fea. 60	F71A	4+	8		16+		1 frag+*	131	44+	x	x
Fea. 65	F35	1 frag					+(cf)	10	8+		

+ = additional seed fragment(s) not included in count
x = present
* one *Zea mays* kernel fragment plus many small cf *Zea mays* kernel fragments

Conclusion

The plant remains from the Edwin Harness Mound were very specialized as one might expect in a mortuary site. Most of the construction wood was hickory. The charcoal from the feature deposits was primarily hickory and white oak group, although other species were present in low frequencies. One sample from a burned area at the center of the middle structure on the mound floor contained mostly pine charcoal. The charcoal types recovered suggest that the aboreal environment was similar to the contact forest; however, no nuts from this forest were found at the site. Fragments of corn kernels and possibly goosefoot and knotweed seeds found in association with a bundle burial may represent mortuary offerings. Corn kernel fragments were also present in one or possibly two other deposits. Carbonized seeds from wild plants recovered from other features were possibly refuse from a meal or were simply the result of accidental dispersal into a hearth or the fire that consumed the structures.

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6 VERTEBRATE FAUNAL REMAINS

ORRIN C. SHANE III

During the 1976 and 1977 field seasons nearly 10,000 pieces of bone were recovered from the Edwin Harness burial mound (33Ro22), Ross County, Ohio. Excavations were directed by Dr. N'omi Greber of the Cleveland Museum of Natural History as part of a project to salvage information from the site prior to its final destruction by agricultural activity.

The Harness Mound is the major earthen mortuary structure associated with the Harness (Liberty) Earthwork Complex, and represents a locus of Hopewellian mortuary-ceremonial activity dating from the first few centuries of the Christian era. The mound is located on the east side of the Scioto River Valley, in an area characterized in prehistoric times by a mixture of deciduous forest and open grassland vegetational communities. The site lies with the Carolinian Biotic Province (Dice 1943), at the western margin of the unglaciated Allegheny Plateau.

Methods

A variety of recovery techniques were employed in the mound excavation, including dry screening through ¼ inch hardware cloth, water separation, and flotation. Consequently, the rate of recovery of bone and other cultural material was high, yielding large numbers of small, often unidentifiable bone fragments. Therefore, each bone piece was examined and initially placed into one of three categories, either as bone identifiable below the class level, bone identifiable to class only, or bone unidentifiable to class. The criterion for identifiability below the class level was the presence of the major portion of an articulatory surface; bone was identified to class on the basis of gross structure.

For that portion of the assemblage with bones bearing an articulatory surface, identifications were made after comparison with skeletal reference collections housed in the James Ford Bell Museum of Natural History, University of Minnesota, and the Science Museum of Minnesota. Scientific and common names of mammals follow Hall and Kelson (1959), while the names of birds are from the *Checklist of North American Birds* of the American Ornithologists' Union (1957). The scientific and common names of fishes follow Trautman (1957).

The minimum number of individuals (MNI) represented by the identifiable bones was determined by simple osteological count of right and left elements. Because of the small size of the sample and the absence of bones indicative of the age of individuals, this method of determining MNI is probably satisfactory.

Several excavation units and features yielded mammal canine teeth drilled for suspension. While many of these specimens were burned and fragmentary, some teeth were sufficiently complete for identification. A minimum number of drilled canines was obtained from a count of distal, medial, and proximal fragments. Perforation for suspension was near the base of the tooth root, and fracture generally occurred at the point of drilling. Therefore, distal fragments were defined as including the tooth portion from the tip of the crown to the point of fracture at the perforation. Medial fragments lacked the tip of the tooth, while proximal fragments were defined as the tooth portion from the base of the root to the point of fracture at the perforation. The minimum number of drilled canine teeth was determined from counts of distal, medial and proximal fragments plus whole canines.

Results

A total of 9,762 pieces of bone were recovered. Of these, 3,036 pieces, or 31.10% of the total, were very small fragments unidentifiable to class. Of the remaining 6,726 bones, 176 pieces were identifiable to the family, genus, or species levels. Table 6.1 shows the frequency of identified and unidentified bones by class; the frequency of identified vertebrate taxa is presented in Table 6.2.

Sixteen complete perforated mammal canine teeth and 225 proximal, medial, and distal fragments represent at least 171 specimens of drilled canines. All but 5 of these objects were burned, and some were compleetely calcined. Seventeen specimens could be identified to the genus or species level as follows:

Raccoon	10 specimens
Canis sp.	4 specimens
Grey Fox	2 specimens
Bobcat	1 specimen

Feature 44, described in the field as a deposit of burned materials and ash, yielded 115 fragments of drilled ca-

TABLE 6.1
Frequency of Identified and Unidentified Bones by Class

Class	*Identified*	%	*Unidentified*	%	*Total*	%
Mammal	133	1.98	6,211	92.34	6,344	94.32
Bird	24	0.36	260	3.87	284	4.21
Reptile	2	0.03	51	0.76	53	0.79
Fish	17	0.25	28	0.42	45	0.67
Totals	176	2.62	6,550	97.38	6,726	100.00

TABLE 6.2
Frequency of Identified Vertebrate Remains from Edwin Harness Mound

Scientific Name	*Common Name*	*No. of Bones*	%	*MNI*	%
Odocoileus virginianus	Deer	35	19.89	2	6.25
Procyon lotor	Raccoon	11	6.25	6	18.75
Canis sp.	Canid	5	2.84	2	6.25
Urocyon cinereoargenteus	Grey Fox	1	0.57	1	3.13
Lynx rufus	Bobcat	2	1.14	1	3.13
Sylvilagus floridanus	Cottontail	1	0.57	1	3.13
**Tamias striatus*	Chipmunk	28	15.91	1	3.13
Peromyscus maniculatus	Deer Mouse	2	1.14	1	3.13
Rodentia	Small Rodent	1	0.57	1	3.13
Homo	Human	47	26.70	3	9.37
Total Mammal		133	75.57	19	59.37
Meleagris gallopavo	Turkey	15	8.52	2	6.25
**Gallus gallus*	Chicken	5	2.84	2	6.25
Colinus virginianus	Bob-white Quail	1	0.57	1	3.13
Buteo sp.	Hawk	1	0.57	1	3.13
Anas sp.	Duck	1	0.57	1	3.13
Passeriformes	Songbird	1	0.57	1	3.13
Total Bird		24	13.64	8	25.00
Colubridae	Snake	2	1.14	1	3.13
Total Reptile		2	1.14	1	3.13
Ictalurus sp.	Catfish	7	3.98	1	3.13
Micropterus sp.	Bass	6	3.41	1	3.13
Catostomidae	Suckers	4	2.27	2	6.25
Total Fish		17	9.66	4	12.50
Grand Totals		176	100.00	32	100.00

*Intrusive

nines representing at least 99 specimens. Also associated with these canines was a fragment of a cut and polished bobcat (*Lynx rufus*) mandible. This specimen is the anterior portion of the right mandible including the alveoli of the canine and the adjacent two premolars. The mandible is cut parallel to the plane of the dentition at the base of the tooth roots, and grinding is evident along the cut surfaces. A hole was drilled through the mandible, below the first premolar and posterior to the canine. This bobcat mandible fragment and the associated perforated canines may represent a necklace or other similar ornament.

Discussion

Chipmunk and domestic chicken are both clearly intrusive to the site. The chipmunk is represented by 28 bones found articulated in situ; apparently the animal died after burrowing into the mound. The occurrence of domestic chicken is interesting, for it is likely that these bones represent meals of such earlier excavation crews as those led by Putnam, Moorehead, and Mills. All of the chicken bones were recovered from previously disturbed portions of the mound, in and under backdirt from prior excavations and well below the modern surface.

Apart from the intrusive modern domestic chicken, the faunal assemblage is in no way unusual for a Woodland context in the Carolinian Biotic Province. No exotic species are present, and those animals which are represented are to be expected. White-tailed deer, raccoon, turkey, and fish account for approximately 45% of identifiable bone and almost 50% of the individuals present. These species were also among those most numerous in the environmental zones around the site.

What may be most significant about this assemblage is its very small size. If the sample is truly representative of animal utilization on the Harness Mound floor, then it would appear that animal foods did not play a particularly important role in Hopewellian mortuary-ceremonialism as practiced at Harness. While animal parts may have been used as ornaments, certainly there is no evidence for mass offerings of animals, or for large-scale processing of foods for use on the mound floor.

The small size of the assemblage would seem to preclude any large habitation at the mound as mortuary activities were carried out. Furthermore, the paucity of faunal remains argues against the mortuary floor being the site of accumulation and exchange of food resources. If anything, animals appear to have been used on the mound floor in much the same manner as at habitation sites, but in far smaller quantity.

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7 ANALYSIS OF HUMAN SKELETAL MATERIAL

Ohio Historical Society Collections

RAYMOND S. BABY and SUZANNE M. LANGLOIS

The fragmentary skeletal materials from the early excavations in the Edwin Harness Mound by Warren K. Moorehead (1897) and William C. Mills (1907), presently in the Ohio Historical Society collections, represent only a small part of the total number of burials recorded in the field. Thus general statements concerning the total population from which the individuals came cannot be made.

There are cremated bone fragments in the collections from the Harness "Rectangular Grave Exhibit." At least three individuals are represented: an adult male, an adult female, and one immature individual. These bones probably represent a conglomeration of several burials excavated and combined for exhibit. The duplication of parts includes condylar fosses, mandible with tooth sockets, right mandibular fragments, and vertebrae. The burning of the remains follows the standard pattern for Hopewell (Baby 1954). The analysis of these bones is included in Table 7.1.

The cremated burial excavated in 1977 (Feature 56) contained two thin skull fragments, one anterior inferior parietal, one mastoid process, one mandible, and several long bones. The coronal suture exhibits the beginning of closure. These bones are from an adult female, around 30 years old. Again, the burning of the remains follows the standard pattern for Hopewell.

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Cleveland Museum of Natural History Collections

STEPHANIE J. BELOVICH

All of the skeletal material included in this analysis was excavated from the Edwin Harness Mound (33Ro22) in 1977 by field crews under the direction of N'omi Greber.

The skeletal material analyzed was sparse and fragmentary, few bones being complete. As a result, analytic procedures were limited to 1) inventory, 2) age and sex determinations, where possible, and 3) gross macroscopic examination for osteopathology.

Anthropometric measurements were not possible due to the incompleteness of the bones. Skeletal age determinations were based upon the following criteria: 1) dental eruption (Brothwell 1972) and 2) epiphyseal fusion (Schour and Massler, cited in Brothwell 1972; Bass 1971; and Krogman 1962). Determinations of sex were based upon pelvic examination for major sexing criteria (Bass 1971). The material was also examined for the presence of four categories of pathological skeletal lesions: 1) developmental, 2) degenerative, 3) infectious, and 4) traumatic. The results of these analyses are summarized in Table 7.2.

The three burials recovered during the 1977 field season can hardly be considered a population, and only insufficient data can be obtained for the other Harness burials; thus, it is impossible to address questions of population dynamics. Nonetheless, some statements can be made.

Feature 60 was a charred and partially burned bundle burial. An age determination of 19–22 years was based upon the following observations:

1) absence of epiphyseal fusion of the iliac crest
2) partial epiphyseal fusion of the femur
3) dental development
4) dense, uniform trabecular bone

The skeleton was determined to be that of a female because of the presence of a wide sciatic notch and a deep pre-auricular sulcus. No pathological lesions were observed.

Feature 75 was a primary inhumation recovered from a disturbed context, which resulted from previous excavations. An age determination, other than to classify this individual as an adult, was not possible. The porous nature of the trabecular bone and the presence of osteophytosis, however, suggest that this adult was past middle age. The major sexing characters of the innominate were missing. A small portion of what appeared to be the beginning of a deep pre-auricular sulcus was present. This suggests that the individual was female. Osteophytosis

TABLE 7.1
Edwin Harness Mound Human Skeletal Material Excavated 1896–1905

O.H.S. No.	*Bone*	*Sex*	*Age*	*Comments*
7/56	Cranium with facial mask absent	Male	Approx. 45 years	Marked bifrontal flattening, probably mesocranic
7/B4, 14150	Facial mask only	Initial development of supraorbital ridges suggests male	Immature, 4–5 years	No evidence of bifrontal flattening
7/B2, 13849, & 13850	Complete right parietal, part of frontal		Immature (child)	Not part of 7/B4, 14150
7/B1, 13814	Intact left ilium	Greater sciatic notch suggests female	Under 13 years	Elements of innominate ununited, iliac crest ununited
7/B6, 14171	Left tibia	———	Immature	Epiphyses ununited
7/B4, 14152	Portion of right frontal	Adult probably male, from superior orbital margins	———	Not related to 7/B4, 14150
13910/ 13911	Nearly complete right parietal, portions of right occiput and frontal	Male	40 years by suture closure	———
7/53	Intact mandible	Male	Approx. 35–40 years	Not related to 7/56 but could be to 7/B4, 14152 or 13910/ 13911, slight erosion of right condyle resulting in more wear on right teeth
20070	Intact mandible	Male		Not related to 7/56, could be to 13910/11 or 14152, large (12 x 10 mm) aperture in right ascending ramus 4.5 mm below notch, due to bone tumor; healing begun on exterior surface, draining-type abscess; some trauma to right condyle, marked reduction of right ramu compared to left
7/	Parts of both skull and postcranial skeleton (ca. 19%) represented	Acetabulum suggests female	Lapsed union on posterior sagittal suture places age above 45 years	Bone ranging from completely normal (unburned) to completely incinerated
7/ (exhibit)	———	Male	ca. 50 years	Vault extremely thick, arthritic lipping of condylar fossa and upper lumbar & lower thoracic vertebrae quite extensive
7/ (exhibit)	———	Female	45–47 years	Slight arthritic lipping on cervical, none on condylar fossa, sagittal and part of lambdoid suture completely closed
7/ (exhibit)	1 fragment of unburned cervical vertebra	———	Immature	———

was the only pathological lesion observed. Degeneration involved lipping and destruction of the vertebral bodies. Finally, copper staining was observed on several of the bones. Table 7.2 details the extent of this observation.

Feature 84 was located in a grave cut through the mound floor and into the natural gravels which underlay the mound. Dental eruption and the length of the humerus were used to establish an age of 6–8 months. Sex, of course, remains undetermined. No pathological lesions were observed.

No developmental, infectious, or traumatic lesions were observed for any of the individuals examined in this study.

In summary, the three individuals recovered from the Edwin Harness Mound during the summer of 1977 were examined for sex and age determinations and osteopathology. The small sample size and its fragmentary nature limited the scope of the present study to inventory and description.

TABLE 7.2
Edwin Harness Mound Human Skeletal Material, non-cremated, 1977

Feature #	*Specimen*	*Comments*
60		partially burned bundle burial female, 19–22 yrs
	frontal; missing small portion of squamous and L & R orbits	
	L temporal; missing squamous	
	R temporal; missing squamous and mastoid	
	L zygoma	
	L & R parietal	
	occipital; missing base, R condyle and portion of squamous	
	L & R nasal	
	L & R maxilla; missing frontal process and portion of body	
	L mandible	
	R mandible; missing coranoid process, condyle and portion of ascending ramus	
	148 skull fragments	
	3 incisors	
	1 canine	
	3 premolars	
	12 molars	
	2 roots	
	L scapula; missing superior and medial borders, glenoid cavity, coracoid and portions of body, axillary border and spine	
	5 thoracic spinous processes	
	L articular facet of atlas vertebra	
	17 vertebra fragments	
	36 rib fragments	
	L & R radius; shaft fragments	
	L ulna; shaft fragments	
	R femur	
	L femur; mid-shaft fragment, greater trochanter and neck	
	L tibia; proximal and distal fragments	
	R tibia; distal fragment	
	(L/R)? tibia; mid-shaft fragment	
	L & R fibula; distal fragments	
	84 long bone fragments	
	L & R patella	
	R innominate; articular surface and iliac portion of acetabulum	
	L innominate; small portion of ilium and iliac portion of acetabulum	
	5 innominate fragments	
	L & R calcanous	
	L talus	
	L cuboid fragment	
	L 2nd cuneiform	
	R 2nd cuneiform	
	navicular fragment	
	L 3rd metatarsal fragment	
	L 4th metatarsal fragment	
	R 5th metatarsal fragment	
	foot phalanges: 5 proximal, 2 medial, 1 distal	
	hand phalanges: 1 proximal	
	1st metatarsal fragment	
	4 metatarsal/metacarpal (?) fragments	
	3 phalange fragments	
	1000 plus unidentifiable bone fragments less than 1 cm in size	
75		primary inhumation, adult female, osteophytosis, copper staining on many of the bones
	5 cranial fragments	
	L scapula; acromion and body fragments	copper staining
	R scapula; glenoid and acromion, 3 body fragments	copper staining

Feature #	*Specimen*	*Comments*
	35 vertebral fragments	5 with copper staining
	L femur; proximal head, portion of shaft	copper staining
	R femur; mid-shaft fragment	
	61 long bone fragments; upper/lower limbs	
	L patella	
	R patella fragment	
	R innominate; acetabulum, portion of ilium	
	L innominate; portion of acetabulum	
	14 innominate fragments	5 with copper staining
	L talus fragment	
	calcaneus fragment	
	navicular fragment	
	L 2nd cuneiform fragment	
	L 3rd cuneiform fragment	
	19 metatarsal/metacarpal (?) fragments	5 with copper staining
	300 plus unidentifiable bone fragments less than 1 cm in size	
	4 unidentifiable burned bone fragments	
84		Infant, 6–8 mos.
	L & R frontal orbits	
	L & R lateral portions of occipital	
	L & R petrous portions	
	22 cranial fragments; parietal, temporal, frontal, occipital and sphenoid represented	
	R mandible; condyle and portion of ascending ramus	
	L mandible; body and condyle	
	1 incus	
	2 malleus	
	6 incisors	
	2 canines	
	6 deciduous molars	
	4 permanent molars	
	R neural arch of 1st vertebra	
	24 neural arches	
	7 centrums	
	L scapula; portion of axillary border and spine	
	25 rib fragments	
	L humerus fragment	
	1 sacral fragment	
	100 plus unidentifiable bone fragments less than 1 cm in size	

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8 MOLLUSC IDENTIFICATION AND ANALYSIS

DAVID R. MORSE

The archaeological salvage excavations of the Edwin Harness Mound (1976–1977) by the Cleveland Museum of Natural History and the Ohio Archaeological Council recovered 332 molluscan remains (19 species) in various cultural contexts associated with the mound. The shell remains analyzed included local Ohio naiads (51%) and terrestrial gastropods (31%) as well as marine gastropods (17%) from the Atlantic Coast. As this research project is only the latest phase in the investigation of the Edwin Harness Mound, it is likely that the mollusc material discussed in this report represents only a small sample of the items that were originally associated with the mound structure (over 3,000 shells are part of the Edwin Harness Mound collection at the Ohio Historical Society). Although the sample recovered in these recent excavations is small, it is hoped that some interpretational context can be given to the importance and use of mollusc species by Hopewell groups (see Appendix 8.1).

As part of the overall project, two major areas of the site were excavated. First, in order to define any remnant sections of the mound structure, the entire floor was exposed. Second, once the mound structure had been defined, exploratory radial trenches were opened with the aid of power equipment to expose any additional midden areas or structures. Prehistorically used shell material was recovered from both areas.

In order to characterize the range of the mollusc species found on this site, an attempt was made to identify the genus and species of all items. At this site, however, most of the material consisted of only small sections of shell, many times lacking the phenotypic characteristics used to distinguish between species. As a result, the specific identification in this report is tentatively offered to facilitate a discussion of dietary, environmental, and other variables. The relative frequency of species (Table 8.1) has been based on a tally of the number of locations from which a species was recovered (maximum number of individuals, MaxNI; Grayson 1973). Although this method has many problems (Grayson 1973), in this case, as the material was widely scattered over the site, it would seem unlikely that fragments are from the same individuals.

To add to these problems, a third of the shell material recovered from the 1976–1977 Harness Mound excavations were found in a disturbed stratigraphic context. Many of the early investigators of the Ohio Hopewell complex included the Harness Mound in their field investigations. This resulted in much of the interior sections of the mound being devoid of stratigraphically significant material. Most of the mollusc remains discussed in this report were recovered from the exterior edges of the house structures and mound gravel ring (Feature 1).

In addition, the mollusc material from the Harness Mound curated at the Ohio Historical Society (OHS) appears to be very selective. Most of this collection consists of exotic marine shell fragments and shell beads. Mollusc species indigenous to Ohio, all naiads, constituted less than 1% of the OHS collection (93% of the material from the 1976–1977 excavations consisted of indigenous species). It is interesting to note that the relative frequencies of local species that are represented in both collections are similar, suggesting that both samples are part of the same overall statistical population (see Appendix 8.2).

Naiads

Compared to other sites in southern Ohio, the range of naiad species at the Harness Mound site is somewhat limited (see Table 8.1). A total of three species were identified from the Harness Mound site: *Lampsilis ovata* (30%), *Elliptio dilatatus* (45%), *Amblema costata* (25%). These species are some of the most common naiad (freshwater pelecypods) species found in archaeological sites and in recent collections from central and southern Ohio (Stansbery 1965). *Elliptio dilatatus* (common filter clam or spike mussel), a very adaptable species, is found in a wide range of riverine habitats, which probably accounts for its high frequency at Harness. On the other hand, *Amblema costata* (common river mussel) and *Lampsilis ovata* (ovate river mussel) are found in small, slow moving, shallow streams or tributaries of large streams, preferring sandy and gravel bottoms. It is likely that these species somewhat reflect local conditions of the Scioto River near the mound.

It is interesting to note that a wider range of naiads were found at the McGraw site (Prufer 1965) and the Morrison Village site (Prufer and Andors 1967), both of which are located near Harness on the Scioto River in Ross County. For example, in the McGraw site report, Stansbery (1965) lists 25 naiad species. It is likely that a wider range of naiad species had existed in the Scioto River during the occupation of Harness than were found in the recent excavations. The differences in the relative numbers of species between these sites probably reflect some dissimilarity in activities (e.g., Brose 1972). If the McGraw site is primarily a habitation site, then one would expect that there would be more evidence of food procurement and tool manufacture activities, which seems to be the case. The low number of naiad shells at Harness might be related to occasional manufacture of a limited range of artifacts, possibly including shell beads. Even though many have assumed that most shell beads were made from ex-

TABLE 8.1
Summary of Mollusc Taxa Identified, Edwin Harness Mound

Taxa	Max NI* 1976–1977 Exc	%	Max NI* OHS	%
		Naiads		
Fragments, species indeterminate	21	43.8		
Lampsilis ovata	1	2.1	5	20.8
Lampsilis sp?	5	10.4	3	12.5
Total *Lampsilis*	6	12.5	8	33.3
Elliptio dilatatus	6	12.5	3	12.5
Elliptio sp?	6	12.5	10	41.7
Total *Elliptio*	12	25.0	13	54.2
Amblema costata	3	6.3	2	8.3
Amblema sp?	6	12.5	1	4.2
Total *Amblema*	9	18.8	3	12.6
Total	48	100.1	24	100.1
		Terrestrial Gastropods		
Fragments, species indeterminate	11	28.2		
Stenotrema leaii	1	2.6		
Mesodon sp?	1	2.6		
Anguispira alternata	1	2.6		
Anguispira sp?	4	10.3		
Total *Anguispira*	5	12.8		
Oxychilus sp?	1	2.6		
Zonitoides arboreus	4	10.3		
Discus cronkhnitei	2	5.1		
Helicodiscus para.	8	20.5		
Retinella wheatyi	1	2.6		
Vertigo morsei	2	5.1		
Pupilla sp?	1	2.6		
Cionella lubrica	1	2.6		
Hawaiia miniscula	1	2.6		
Total	39	100.2		
		Marine Gastropods		
Marginella sp?	2	28.6	500**	
Jaspidella jaspidae	2	28.6	3	
Olivella sp?	1	14.3	1400	
Oliva sp?			4	
Vitrinella sp?			6	
Busycon contrarium	1	14.3	2	
Busycon spiratum			1	
Fasciolariidae			2	
unidentifiable shell bead	1	14.3	2000**	
Total	7	100.1		

*maximum number of individuals
**estimate

otic marine gastropods, it is possible some naiads were used in the manufacture of shell beads. The three naiad species found at Harness are among those few species thick enough for shell bead manufacture.

Terrestrial Gastropods

At the Harness Mound site, at least ten terrestrial gastropod species were recovered from a total sample of 39 individuals (MaxNI). All items were collected as excavated; however, most of the smaller sized (below 3 mm) species were recovered from flotation samples of post holes and features (mostly in the genera *Zonitoides*, *Discus*, *Helicodiscus*, *Retinella*, *Vertigo*, *Pupuilla*). All the terrestrial gastropods in the sample are indigenous to Ohio except for *Oxychilus* (cellar snail). This species was introduced from Europe in the eighteenth century (LaRocque 1970) and most likely is related to the excavations early in this century. The single specimen identified was found at the top of Feature 89.

The interpretation of gastropods in an archaeological context is often related to paleo-environmental variables, especially in a general description of the vegetation cover of the site. Although it is difficult to relate many of the species discussed here to specific environmental conditions per se, some comments seem to be warranted. Most of the species found at Harness, especially in the genera *Anguispira* (cf. *Alternata*) (striped forest snail), *Zonitoides* (zonite shell), *Discus* (common disk shell), and *Helicodiscus* (parallel disk shell), are most often found within forest detritus: logs, stumps, and other decaying material. So it seems reasonable to suggest that a certain amount of forest cover existed in the area of the mound. *Helicodiscus* is also associated with second growth areas which might have been present near the mound. The absence of a significant number of species which favor either cleared areas, especially in the genus *Mesodon*, or heavily wooded areas, such as *Anguispira kochi*, is notable. This is in contrast to other archaeological sites in south-central Ohio (sites along Caesar Creek, Brose et al. 1979; Killen A and B sites, Brose et al. 1979; McGraw site, Prufer 1965; and Morrison Village site, Prufer and Andors 1967). Although this sample is small, it suggests that the vegetation cover near the mound could best be described as an open forested area or parkland.

This range of gastropods at the Harness Mound varies from the published list of molluscan fauna from the Morrison Village (Prufer and Andors 1967) and McGraw (Stansbery 1965) sites near the Harness Mound along the Scioto River in Ross County. At both sites *Anguispira kochi* and *Allogona profunda* (profound forest snail), primarily a forest adapted species, are important at these sites. So, it would seem that these sites were more heavily wooded than was the area near the Harness Mound.

Marine Gastropods

Seven marine gastropods were recovered in the 1976–1977 excavations at the Harness Mound site. Taxonomically, these molluscs can be grouped into three major families: *Olividae* (olive shells), *Marginellidae* (marginella shells), *Melongenidae* (conch shells). It was obvious that these items were part of a much larger sample, as over 3,000 marine gastropods from the Harness Mound are curated at the OHS. In general, all items are native to the southeast Atlantic Coast or Gulf Coast of the United States. Although the items recovered in the present excavations seem to be finished artifacts, the earlier collections at the OHS also include a whole range of unmodified, partially finished and worked fragments.

The largest item recovered in the excavations was a conch shell or lightning whelk, *Busycon contrarium* (Feature 60, bundle burial), which had been modified by removing the columellae and trimming the edge surface of the aperture. (The term "whelk" as applied to *B. contrarium* should not be confused with waved whelks in the family *Buccinidae*.) In comparison with other shell of *B. contrarium*, this item is somewhat small but still can be considered a fully developed individual (see Table 8.2). In the family *Melongenidae*, four species besides *B. contrarium* are found along the Atlantic coast in the United States: *B. carica* (knobbed whelk), *B. canliculatum* (channeled whelk), *B. spiratum* (fig whelk), *B. perversum* (perverse whelk). Of these, *B. contrarium* has the most southern range, which extends from North Carolina to Florida. In the Harness Mound collections at the OHS, two additional *B. contrarium*, one *B. spiratum*, and one Fasciolariidae (tulip shell or horse conch) have been identified tentatively. These species are common to many Hopewell sites in the Ohio Valley. Seip and Mound City have a few molluscs in the genus *Crassis* (helmet shell)

TABLE 8.2
Comparison of Dimensions,
Melongenidae—Conch Shells

Cat. No.	*Length*	*Width*
Busycon contrarium		
OHS-Collections 1375G 7/34	20.5 cm	12.2 cm
OHS-Collections ——— 7/32	27.5	16.8
1976–1977 Excavations 281E	17.5	8.5
Mean of OHS Material	24.0	14.5
Overall Mean	21.8	12.5
Busycon spiratum		
OHS-Collections 13757 7/34	21.6 cm	14.1 cm

which are absent from Harness. *Crassis* is native only to southern Florida, which might have been beyond the range of southern contacts for the inhabitants of Harness.

The remaining items are within the families *Marginellidae* (*Marginella* sp?, marginella shells) and *Olividae* (*Olivella* sp?, dwarf olive shells; *Jaspidella jaspidae*, jasper dwarf olive shells). The native range for these species is very similar to *Busycon* (North Carolina to Florida), which seems to confirm that this region is the overall acquisition area for the Harness Mound shell material. These species, recovered from the 1976–1977 excavations, characterized 97% of the marine shell at the OHS from Harness and seem to be a good sample of the overall collection.

Spatial Distributions

As mentioned, the molluscan faunal collection from the Edwin Harness Mound is the result of excavations of the remaining mound floor in its entirety and a sampling of selective areas outside of the mound structure. This procedure included the excavation and collection of flotation samples from all features (burials, hearth, and activity areas) and all post molds. Although large sections of the mound had been excavated previously, it was noted that some of the mound structure and sections of the mound floor were intact. In addition, the investigators found post hole outlines of a major house structure on the mound floor, part of an early construction phase. As molluscs were found within a number of features, an analysis of their distribution was considered important to the overall understanding of the site. Assemblage variability and frequencies of individuals found within a particular feature of significant stratigraphic level were compared to the site as a whole although sample size was not large.

A comparison of molluscs within and beyond the limits of the mound found approximately 90% of the same local aquatic and terrestrial species in both areas. That eight times as many individuals were found within the mound area is attributed to the amount of area excavated. No significant differences in relative frequency or species differences were noted between differing intra mound structures or between stratigraphic features and/or levels. These data suggest that proximal vegetation patterns within the general site area were consistently parkland forest throughout the sequence of structure and mound construction. Fifty percent of the smaller species (*Zonitoides*, *Discus*, *Helicodiscus*, *Vertigo*) were directly associated with post holes, and an additional 20% of these molluscs were found near the highest density of post holes. As these species commonly feed upon decaying plant material, it seems that some of these posts rotted in situ. Because such posts were evenly distributed in different structures across the mound floor, it may be that these structures are more or less coeval. At any rate, these data strongly support the position that every structural portion of the submound structure underwent some more-or-less extended period of exposure prior to either burning or entombment.

Since these samples were small, these tentative hypotheses should be evaluated in future research.

Discussion

The identification and interpretation of mollusc material from the Edwin Harness Mound excavations and Ohio Historical Center collections has provided some context for the discussion of environmental and cultural variables, in spite of the small sample and extensively disturbed areas. Although all of the recommendations were provisional and inductive, this material adds to the general data base for Hopewell sites. It is hoped that mollusc samples will be collected in the future.

Overall, the Harness Mound material seems to exhibit a different range of molluscs than were found on other sites along the Scioto River. Principally, it is suggested that the number of naiads were low because shell was used mainly as raw material for a small number of specific artifacts (e.g., shell beads) and that indigenous gastropods are related to an open parkland forest environment. Analysis of the spacial distribution seems to indicate that these environmental conditions were present on the site during all construction phases of the mound.

Appendix 8.1

Mollusc Identification Analysis
Edwin Harness Mound
1976–1977 Excavations

Cat. No.	*Provenience*	*Taxa*
2D	N535-E492.5, disturbed	1 frag., gastropod
2F	N535-E492.5, disturbed	1 frag., gastropod
3H	N547.5-E492.5, disturbed but close to original floor	1 frag., gastropod
3J	N547.5-E492.5, disturbed but close to original floor	1 ventral margin frag., poss. *Lampsilis*, burned
13B	N547.5-E492.5, disturbed but close to original floor	1 frag., gastropod
21J	N547.5-E502.5, disturbed near "Boys' 1880"	1 frag., gastropod, poss. *Anguispira*
23A	N547.5-E502, disturbed	1 shell bead
24A	N535-E495, Fea. 89	1 *Oxychilus*
24C	N535-E495, Fea. 89	1 frag., naiad 1 *Vertigo morsei* 1 *Helicodiscus*

24C (bag #2)	N535-E495, Fea. 89	1 dorsal margin frag. w/o beak, *Elliptio dilatatus*
24E	N535-E495, Fea. 89	1 *Cionella lubrica*
30	Surface, collected June 1976	1 R dorsal margin frag. w/o beak, *Elliptio dilatatus*
32	N540-E492.5, south balk surface	1 R dorsal margin frag. w/o beak, *Elliptio dilatatus*, burned
37A	N535-E492.5, post hole #16	2 frag., naiad
39B	N535-E492 5, post hole #15	20 frag., naiad, burned
39B (Bag #2)	N535-E492.5, post hole #15	1 frag., naiad, burned
64A	N532.5-E492.5, disturbed	1 frag., naiad
64C	N532.5-E492.5, disturbed	1 dorsal margin frag., *Marginella*
103B	N522.5-E492.5, disturbed but near other archaeological deposited material	1 *Jaspidella jaspidea*
103C	N522.5-E492.5, disturbed but near other archaeological deposited material	1 frag., naiad, poss. *Elliptio*
109	Surface, collected July 1976	1 frag., naiad, poss. *Amblema*
117B	N520-E505, disturbed, Fea. 1	1 frag., naiad, burned
118D	N535-E495, front loader cut #2, disturbed	1 R dorsal margin frag. w/ beak, *Amblema costata*
128A	N535-E495, poss. post hole #8	10 frag., 1 naiad
130	N535-E500, poss. post hole #10	1 frag., naiad
138C	N522.5-E495, floor surface	1 frag., naiad
138C	N522.5-E495, floor surface	4 frag., naiad, poss. *Elliptio*
139B	N520-E445, floor surface	1 frag., naiad
168	N522.5-E495, post hole #80	1 R dorsal margin frag. w/o beak, *Elliptio dilatatus*
168 (bag #2)	N522.5-E495, post hole #80	1 ventral margin frag. *Elliptio*
183E	N525-E495, Fea. 30	6 frag., naiad, poss. *Amblema*, burned
183F	N525-E495, Fea. 30	1 dorsal section of *Marginella*
		1 frag., gastropod
188A	N532.5-E495, post hole #40	1 dorsal margin frag. w/o beak, poss. *Elliptio*
217	No provenience	2 frag., naiad, burned
		4 frag., gastropod, burned
		1 frag., *Amblema costata*
219A	Surface, collected June 1967	10 frag., naiad, poss. *Amblema*, burned
223D	N520-E507.5, Fea. 37	1 *Anguispira alternata*
271A	N552-E500, disturbed	8 frag., naiad
		1 ventral margin frag., poss. *Lampsilis*
271Q	N552-E500, post hole #179	1 *Zonitoides*
272C	N560-E512.5, backdirt	10 frag., naiad
		1 dorsal margin w/o beak, *Lampsilis*
281B	N517.5-E502.5, Fea. 60	15 frag., naiad, poss. *Elliptio*
281E	N517.5-E502.5, Fea. 60	1 *Busycon contrarium*
281C	N517.5-E502.5, Fea. 60	4 frag., naiad
		1 frag., poss. *Stenotrema leaii*
		15 frag., naiad, poss. *Anguispira*
281D	N517.5-E502.5, Fea. 60	10 frag., gastropod, poss. *Anguispira*
290C	N535-E502.5, post hole #171, poss. disturbed	1 R dorsal margin frag. w/ beak, *Elliptio dilatatus*
295B	N530-E502.5, post hole #160	1 *Olivella*
299A	N500-E502.5, Fea. 55	6 frag., 2 gastropods, poss. *Anguispira*
305B	Front loader Area #3, post hole #102	1 *Helicodiscus*
308K	N524-E485, post hole #270	3 frag., naiad
310C	N537.5-E497.5, post hole #252	1 L dorsal margin frag. w/o beak, *Elliptio dilatatus*
311C	N522-E495, mound loading directly over Fea. 3	1 L dorsal margin frag. w/ beak, *Lampsilis*
312C	N540-E497.5, post hole #66	30 frag., naiad

Flotation Samples

F2B	N520-E507.5, Fea. 37	7 *Zonitoides arboreus*
		4 *Helicodiscus parallelus*
		1 *Discus cronkhitei*
224H	N522.5-E485, east of Fea. 1	8 frag., 1 gastropod
228B	N547.5-E510, poss. post hole #20	3 frag., 1 gastropod
229E	N550-E507.5, mound floor	2 frag., naiad, poss. *Elliptio*, burned
229Q	N550-E507.5, post hole #141	1 *Helicodiscus parallelus*
230L	N522.5-E497.5, post hole #143	2 *Helicodiscus parallelus*
		2 *Zonitoides*

233O	N530-E492.5, Fea. 43	1 frag., naiad 1 frag., gastropod
240A	N547.5-E507.5, disturbed	15 frag., poss. *Amblema*
240B	N547.5-E507.5, disturbed	9 frag., naiad 1 L dorsal margin frag. w/ beak, *Amblema* 1 R dorsal margin frag. w/o beak, *Lampsilis*
240C	N547.5-E507.5, disturbed	1 *Helicodiscus*
262A	N550-E509, above Fea. 33	1 L dorsal margin frag. w/ beak, *Elliptio dilatatus*
260D	N557.5-E500, Fea. 44	1 dorsal margin frag. w/ beak, *Amblema costata*
260P	N557.5-E500, Fea. 44 backdirt	6 frag., naiad 1 dorsal margin frag. w/ beak, poss. *Amblema*
269C	Backhoe trench #4, post hole #147 outside of Fea. 1	1 frag., gastropod
269C (Bag #2)	Backhoe trench #4, post hole #147	12 frag., naiad 1 ventral margin frag., *Lampsilis* 1 frag., poss. *Elliptio*
269D	N517.5-E502.5, backhoe trench #4	6 frag., naiad
270A	Fea. 56	1 frag., gastropod
F71A	N517.5-E507.5, backhoe trench #4, Fea. 60	7 *Helicodiscus parallelus*
F100	Post hole #147	1 frag., poss. *Mesodon* 3 *Zonitoides* 1 frag., poss. *Pupilla*
F269C	Post hole #147	40 *Helicodiscus parallelus* 36 *Retinella wheatleyi* 66 *Zonitoides arboreus* 11 *Vertigo morsei*

Carbon Samples

CCD68	Backhoe trench #6	3 *Retinella* sp? 18 *Hawaiia minuscula*

Appendix 8.2

Preliminary Mollusc Identification Analysis Edwin Harness Mound Ohio Historical Society

Naiads

Cat. No.	*Taxa*
13735-7/99	1 frag., naiad, poss. *Elliptio*
13736	1 frag., naiad, poss. *Elliptio*
13737	1 frag., naiad, poss. *Elliptio* 1 frag., naiad, poss. *Lampsilis*
13738-7/99	1 frag., naiad, poss. *Elliptio*
13739-7/99	1 frag., naiad, poss. *Elliptio*
13740	1 frag., naiad, poss. *Elliptio*
13741	1 frag., naiad, poss. *Elliptio*
13743	1 frag., naiad, poss. *Elliptio*
13745	1 whole shell, *Elliptio dilatatus*
13746-7/99	1 ventral margin frag., poss. *Elliptio*
13747-7/99	1 ventral margin frag., poss. *Elliptio*
14582-7/99	1 whole shell, *Lampsilis ovata*
14583-7/99	1 frag., *Lampsilis ovata*
14584-7/99	1 whole shell, *Amblema costata*
14585-7/99	1 whole shell, *Lampsilis ovata*
14586-7/99	1 whole shell, *Amblema costata*
14587-7/99	1 whole shell, *Lampsilis ovata*
14588-7/99	1 whole shell, *Lampsilis ovata* 1 ventral margin frag., poss. *Amblema*
14589-7/99	1 ventral margin frag., poss. *Lampsilis*
14590-7/99 #7	1 frag., *Elliptio dilatatus* 1 frag., naiad, *Amblema* 1 frag., naiad, poss. *Elliptio* 1 frag., naiad, poss. *Lampsilis*
not labeled	1 whole shell, *Elliptio dilatatus*

Conch

1375G*-7/34	1 *Busycon contrarium*
-7/32	1 *Busycon contrarium*
13757-7/34	1 *Busycon spiratum*
13755-7/33	1 Fasciolariidae
14590-7/99	1 frag., poss. juvenile of *Pleuroploca gigantea*

Small Marine Gastropods

7/36	4	*Oliva* sp?
	1400**	*Olivella* sp?
	500**	*Marginella* sp?
	6	*Vitrinella* sp?
	3	*Jaspidella jaspidea*

Modified Shell

Harness General	20 dorsal sections, *Marginella*, burnished 1 string—single row, ventral sections, *Marginella* 1 string—double row, dorsal sections, *Marginella* 1 string—double row, ventral sections, *Marginella*, burnished 4 strings—double row, dorsal sections, *Marginella* 1 string—single row, dorsal sections, *Olivella*

*This is the catalogue number written on the specimen. Based on the original catalogue of materials collected by Moorehead, the number likely should be 13756.

**estimate

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9 THE FLINT SOURCES

KENT D. VICKERY

Introduction

Four collections of chipped stone items were analyzed:

1. artifacts and debitage recovered during the 1976 field season of excavation at the Edwin Harness Mound, 33Ro22, consisting of 127 items;
2. 1,180 bladelets and bladelet cores surface collected by Robert Harness in the vicinity of the Harness Mound;
3. 627 surface collected artifacts and pieces of debitage from Harness's Site 18; and
4. a similar collection of surface material from Harness's Site 25, consisting of 720 chipped stone items.

Chipped stone material from the Harness Mound excavation consisted of 91 pieces of debitage, 23 bladelets, 1 bladelet core, and both unifacial and bifacial tools and weapons. A bipolar core and 1 tool edge rejuvenation flake were treated as artifacts (rather than debitage) for purposes of this analysis. The Site 18 collection included 7 projectile points, 4 bifacial artifacts, and 4 bladelets in addition to abundant debitage. Debitage also dominated the Site 25 collection, which included 4 projectile points and 14 bladelets. The remaining surface collection consisted of 1,027 bladelets and 153 bladelet cores. For site locations see Greber, Davis, and DuFresne (1981). The present analysis focuses on flint/chert raw material identifications for the 2,654 items from these four collections and on the chipping techniques which produced the 91 pieces of debitage from the Edwin Harness Mound. This latter analysis focuses on 1) incidence of heat alteration, 2) presence or absence of post-detachment utilization and/or retouch, 3) debitage type, and 4) technique of detachment. Unmodified and broken chert pebbles which were found in post holes and features of the 1976 excavations of the Harness Mound were also examined for raw material identifications. These pebbles lacked pronounced bulbar scars and compression ring segments, platform preparation, or other evidence of intentional fracture for artifact production.

Methods

Flint raw material identifications were made by examining specimens under low magnification using a binocular microscope and comparing them with samples obtained from verified outcrop locations. In addition, cortex characteristics were recorded for the Harness Mound debitage in an effort to determine the general contexts from which chert was obtained. "Pebble" chert is material dislodged from its naturally occurring matrix, transported by stream or glacial action, and subsequently deposited some distance away from its source area. In the process, such material acquires a hard, smooth surface patination (cortex). Flakes with cortical retention on portions of the dorsal face and/or platform, as well as artifacts, are referred to in this report as "Local Pebble" chert if they cannot be matched to any of the samples from verified outcrop locations. Artifacts and debitage lacking cortical remnants and unidentifiable as to flint source are referred to as "Unknown."

Heat alteration was recorded in an effort to detect whether or not thermal treatment was part of the sequence whereby artifacts were produced from parent raw material. For those specimens exhibiting thermal modification, macroscopic and microscopic inspection was the basis for distinguishing between heat *alteration* and heat *damage*. The former is commonly recognized by adjacent lustrous and non-lustrous scars (Collins and Fenwick 1974; Greber, Davis, and DuFresne 1981:513), a smoky or cloudy appearance, and/or slight discoloration. It is only among these specimens that candidates for *proper* heat treatment might be present. By contrast, heat damaged specimens often showed extensive crazing, potlid depressions, pronounced color changes, scalloped edges or more serious heat-induced breakage, and/or a chalky texture caused by water having been driven out under thermal stress.

Utilization and retouch were determined by microscopic examination. Retouched artifacts and debitage had had a series of small, contiguous chips intentionally removed from one or more margins, the scars of which were typically uniform in size and shape. Utilized flakes were often recognized by marginally detached chip scars that were less regular in size, shape, and placement and that occasionally resulted in a rather jagged contour. Utilized edges commonly assumed one or more of four basic forms: 1) nibbling, consisting of diminutive scars with an ovate configuration that should have resulted from cutting or scraping relatively soft materials (Binford 1963: 207); 2) hinge fractures with square or rectangular configurations and abrupt terminations, probably resulting from contact with more resistant material; 3) attrition, the gradual dulling or wearing away of formerly sharp edges by the sustained removal of tiny chips or pieces of the tool margin(s); and 4) polish, which succeeds attrition as the functional portions of tools undergo progressive modification with use against relatively soft materials. Polish is recognized as a gloss or sheen under magnification.

Debitage: definitions

An unmodified piece of flint is reduced to a finished tool through stages. The debris created at each stage is reasonably distinctive, which facilitates a classification of waste material for the sequence of stages. One component of debitage analysis involves the recognition and definition of various debitage types which reflect the reduction sequence.

For the Harness Mound collection only, each of several such debitage types is described below in a logical knapping order following the off-site selection or importation of raw material for artifact production.

Checked pebbles. The first step is determining whether or not the raw material acquired is suitable for knapping. The quality of unmodified pebble chert can be *checked* by removing one or more flakes to expose the sub-cortical matrix. This activity results in a *checked pebble.* Comparable treatment of bedded material, which often exhibits thinly weathered surfaces from frost action, was not observed in the sample.

Primary decortication flakes. The reduction sequence is initiated with the systematic detachment of flakes from a weathered piece of flint, which creates flakes retaining cortex over the entire outer (dorsal) face. The removal of these *primary decortication flakes* (White 1963:5) achieves partial decortication of the objective raw material and produces a core tool blank.

Secondary decortication flakes. Additional flake detachment generates *secondary decortication flakes* (White 1963:5). These flakes often retain the scars of one or more previously detached primary decortication flakes and some cortex on the dorsal face, but may be wedge-shaped with cortex remaining only on the thickened edge. The result of their removal is a blank in a more advanced stage or an early stage of a preform.

Primary flakes. Wilmsen (1970:25) refers to post-decortication flakes associated with the shaping of a blank or preform by reducing its mass as *primary flakes* and defines them as "those which were struck from a decorticated core." Primary flakes retain the scars of previously detached flakes over most or all of the dorsal face, with small amounts of cortex sometimes remaining (commonly in the center). They are characteristically thick and often triangular in section. Their removal produces, or reduces the mass of, a preform.

Thinning flakes. Crabtree (1972:94) defines thinning flakes as "flakes removed from a preform by pressure or percussion to thin the piece for artifact manufacture. Thinning flakes are also removed to thin a biface or a uniface." Because the process of bifacial reduction is continuous, the distinction between thinning flakes and primary flakes detached in the advanced stages of reducing the mass of blank or a preform is often arbitrary. The former are typically thinner than primary flakes and retain scars over the entire dorsal face. Their removal produces an advanced stage preform or a finished bifacial tool or weapon. Not all bifacial artifacts reach an advanced stage of reduction because their suitability as tools for certain kinds of tasks (e.g., heavy cutting, scraping, or chopping) may have been achieved by removing only decortication or primary flakes.

As the preform approaches the morphology of the finished tool, *sharpening* flakes may be detached in an effort to strengthen, straighten, and/or sharpen the edges or to shape them by creating indented or projecting contours (Vickery and Lambert 1977). Representing the final stage of the reduction sequence, these tiny chips may not be encountered unless fine mesh screening or flotation techniques are employed during site excavation.

For the analyzed sample, *flake type* is used for all flake debitage from the primary decortication stage through the thinning stage, no sharpening flakes having been recognized in the Harness Mound debitage; *debitage types* include all flake types plus checked pebbles and unclassifiable core fragments (exclusive of bladelet and bipolar cores). The debitage types used for this analysis pertain to a bifacial reduction sequence. A different set of debitage types may characterize unifacial artifact production (including bladelets) and such other specialized knapping as the use of bipolar techniques.

Another dimension of debitage analysis involves attempts to infer various techniques of flake removal. The following categories were used to analyze the Harness Mound flake debitage according to removal technique: 1) hard hammer percussion, 2) soft hammer ("billet") percussion, and 3) indirect percussion ("punch") or pressure. Stone hammers were probably used for hard hammer percussion, deer or elk antler beam segments for soft hammer percussion, and antler tines for pressure or indirect percussion. These techniques are recognizd among waste flakes mainly on the basis of shape and platform configurations. Shape is influenced in part by the force used to detach flakes while platform remnants on flakes should correspond in size and shape with the contacted portion of the percussion or the pressure tool used for flake detachment.

Hard hammer percussion flakes characteristically have a pronounced bulb of percussion and a relatively large platform remnant. They are usually thick and may either hinge or feather at their terminations. The incidence of hinging is greater than with other percussion techniques. Hard hammer percussion is the predominant technique of flake removal in the initial stages of tool manufacture.

As the blank or preform was reduced, a stage would have been reached where continued use of hard hammer likely would have resulted in breakage from overly stressful shock. At this point, the shift to a soft hammer for further thinning would be expected.

Soft hammer percussion flakes generally have a less pronounced bulb of percussion and a platform remnant that is narrower (as measured from the dorsal face to the ventral face) than those detached by hard hammer percussion. Platforms are often of an elongated lenticular shape but may be recurvate from the previous detachment of a flake from the dorsal face at one end of the platform remnant. Soft hammer percussion flakes are characteristically thinner than flakes detached by a hard hammer and usually feather at their terminations.

No attempt was made to distinguish indirect percussion from pressure as flake detachment techniques. In both cases, a tool such as the tip of an antler tine would have been used to apply force on a *point* of the core platform rather than an *area.* Thus, flakes removed by indirect percussion *and* pressure are recognized by the presence of a small circular to oval platform remnant in addition to a bulb of applied force that is only subtly swollen. Such flakes are characteristically thin and have feathered terminations.

When correlated, flake type and technique of flake detachment determinations provide a basis for inferring the points in the reduction sequence at which shifts occurred from hard to soft hammer percussion, and, if employed, to indirect percussion or pressure. This is one way of describing a lithic waste flake assemblage. More importantly, this method monitors the results of prehistoric cultural conditioning with the attendant potential of revealing ethnically diagnostic similarities and differences from one assemblage to the next.

Raw Materials

Flint raw material identifications were attempted for all four collections. At least 9 varieties are present among the excavated artifacts and debitage from the Harness Mound, while 15 were identified in the larger sample that includes Harness's surface collected material. Figure 9.1 identifies the outcrop locations of these varieties in relation to the Harness site complex.

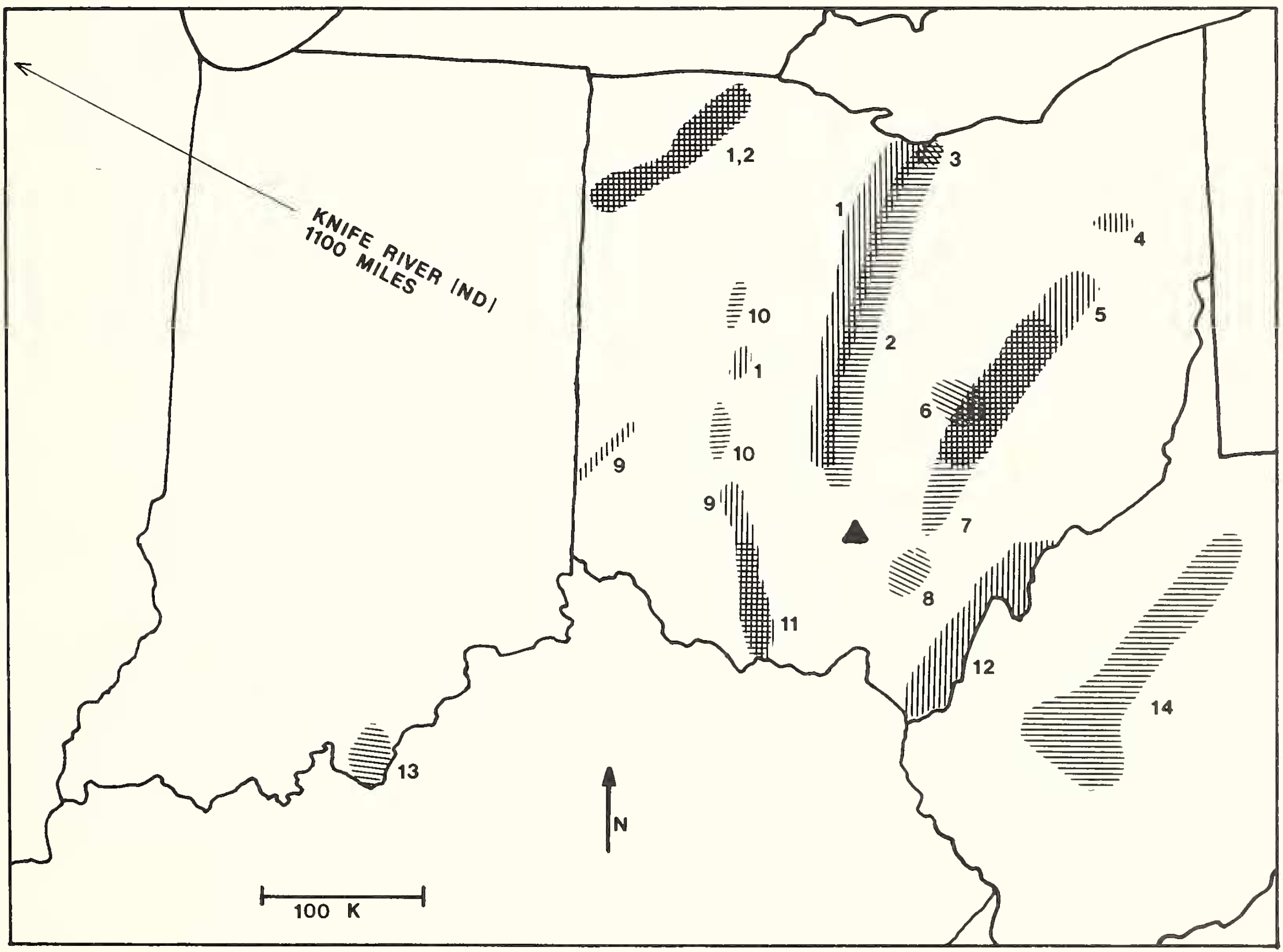

Fig. 9.1. Areas of outcrop of flint varieties present at Harness. ▲ Edwin Harness Mound (33Ro22); 1–Columbus; 2–Delaware; 3–Prout; 4–Plum Run; 5–Boggs; 6–Flint Ridge; 7–Upper Mercer; 8–Zaleski; 9–Brassfield; 10–Cedarville-Guelph; 11–Bisher; 12–Brush Creek; 13–Harrison County; 14–Kanawha Black.

Geological documentation of all Ohio varieties is provided by Stout and Schoenlaub (1945); archaeological occurrences of two or more varieties are discussed by Fowke (1894, 1902, 1928), Holmes (1919), Prufer and Baby (1963), Converse (1972), and Morton and Carskadden (1972). Each is summarized here.

Flint Ridge. This well-known variety is described by Smith (1885), Moorehead (1892:30–48), Mills (1921), Crawford (1967), and Patterson (1979), among others. It is variegated and fine grained with a vitreous luster.

Delaware. Delaware flint is tan to dark grayish brown with sparsely scattered, tiny ostracod inclusions that are white in the non-heat altered state. It is described by Converse (1972:37).

Brush Creek. Described by Carskadden and Donaldson (1973), Brush Creek flint is tan to light gray to dark brown mottled with diagnostic small orange spots on its cortex.

Zaleski. Zaleski would have been the closest of the bedded varieties available to the Harness site inhabitants. This material is brownish black to black and fine grained with a vitreous luster. Kramer (1953) and Morton and Carskadden (1972) discuss its characteristics and prehistoric utilization.

Upper Mercer. Carskadden (1971) and Morton and Carskadden (1972) describe this flint variety, which ranges from light to dark gray and from bluish black to black with white inclusions and thin streaks. The darker material is often fine grained with a vitreous luster.

Boggs. Boggs flint is described by Morton and Carskadden (1972). It is medium-dark gray to black, slightly grainy in texture with a rather dull luster, and may have numerous white fossil (commonly fragmented crinoid stem), quartz, and pyrite inclusions. An orangish, ferruginous patination is distinctive. This variety may be underrepresented because of the non-availability of comparative samples when the Harness surface collections were examined. The excavated collection from the Harness Mound was reexamined, however, for Boggs chert.

Knife River. Clayton, Bickley, and Stone (1970) describe this fine-grained, honey-colored flint, and Braun, Griffin, and Titterington (1982:65–89) summarize midwestern occurrences in Middle Woodland contexts. Knife River flint has a color range from light to rather dark, a diagnostic thin white cortex, and relatively large opaque inclusions in a translucent matrix. That the presence of Knife River represents long-distance acquisition, probably from west-central North Dakota, is noteworthy.

Harrison County. Harrison County flint (also known as "Indiana hornstone") from extreme south-central Indiana also represents long-distance acquisition. Collett (1878:421–423), Shaver et al. (1970:146), Lilly (1937:101–104), Guernsey (1937), Seeman (1975), and Tomak (1980:110; 1982:37–38) are among those who document the archaeological utilization or geological context of this well-known flint variety. It formed in nodules and typically ranges from dark bluish gray at the center to light gray near the cortex. Harrison County flint is homogeneous and fine grained, slightly translucent at the edges of thin flakes, and quickly weathers to a uniformly light to medium blue-gray.

Cedarville-Guelph. Stout and Schoenlaub (1945:20–21) document geological occurrences of this flint variety, and Converse (1972:36–37) mentions its archaeological utilization. It is grainy, pinkish tan or light gray, and has numerous darker gray spots throughout the matrix which are diagnostic for the variety among those identified in the analyzed sample.

Columbus. Stout and Schoenlaub (1945:21–24) and Prufer and Baby (1963:44) discuss this flint variety. It is light and dark brown mottled and rather coarse grained.

Prout. Comparative samples of Prout chert upon which identifications were made were collected from outcrop on the Plum Brook NASA base near Sandusky, Ohio. They are fossiliferous with small pyrite inclusions and range from cream to tan and from light to dark gray. Occurrences of chert in the Prout limestone member documented by Stauffer (1909, 1916) and Stumm (1942) in this area probably refer to this variety. James L. Murphy of Ohio State University (letter to K. D. Vickery, April 22, 1982) believes that the chert from Perkins Township in Erie County mentioned by Stout and Schoenlaub (1945:31) and the "Pipe Creek" chert mentioned by Stothers and Rutter (1978) are also of the Prout variety.

Brassfield. Hastings (1969) gives a description and summary of the prehistoric utilization of Brassfield chert. It is white to flesh pink and is abundantly fossiliferous.

Bisher. Bisher flint is grainy and homogeneous, tan to light purplish, and occasionally banded. It is described by Hastings (1969).

Plum Run. The prehistoric use of Plum Run flint as represented by quarries is discussed by Murphy and Blank (1970); Converse (1972:38) provides a description. Fresh comparative samples are fine grained and light to dark gray and blue mottled, while weathered specimens are tan, orange, red, brown, and green mottled with streaks and patches of white-light gray inclusions.

Kanawha Black. The source of Kanawha Black flint is central and southwestern West Virginia. It is bluish black to black, non-vitreous, homogeneous, and very grainy. White (1903:328–332, 1908:487–488), Krebs (1914:255–266, 643–644), and Price (1921) document geological occurrences, Olafson (1964, 1972) archaeological occurrences.

Hastings (1971) discusses the use of pebble raw material, which is ubiquitous in distribution.

Results of Analysis and Interpretations

Presented below is the distribution of thermally altered specimens according to debitage type in the sample of 91 pieces of debitage from Harness Mound:

Debitage Type	*Heat altered*	*Heat damaged*	*Total*
Core fragments	2	0	2
Primary decortication flakes	3	2	5
Secondary decortication flakes	2	2	4
Primary flakes	2	2	4
Thinning flakes	0	2	2
Uncertain	1	4	5
Total	10	12	22

Twenty-two specimens (24% of the total debitage) are heat altered or damaged, which exceeds the 20% figure that Collins and Fenwick (1974:143) represent as "larger than would be expected by chance" in their search for heat treating technologies among the chipped stone assemblages of 12 archaeological sites in Kentucky. More than half of the heated specimens from the Harness Mound, however, were so damaged that the functional effectiveness of the flakes (or the knapping suitability of the cores from which they were struck) would have been impaired. These specimens may simply represent post-detachment damage unrelated to intentional heat treatment. None of the 10 heat altered pieces of debitage exhibits the frequently subtle changes associated with *properly* heat treated material. Furthermore, heat altered or damaged specimens occur throughout the reduction sequence rather than being clustered at any particular stage. These observations suggest that intentional heat treating of flint and chert was not incorporated into the bifacial reduction sequence. By contrast, the bladelet industry apparently did feature the heat pretreatment of cores (Greber, Davis and DuFresne 1981:513–514).

Table 9.1 gives the proveniences of the Harness Mound debitage. The frequency distributions of debitage and flake types are presented in Tables 9.2 and 9.3. Among the flake debitage, 14 (19.2%) are either utilized or retouched (Table 9.2). One core fragment exhibits a utilized edge (Table 9.3). This indicates a degree of chert resource conservation on the part of the people who produced the sample. The ratio of retouched to utilized to non-utilized flakes is 1 : 1.8 : 14.6.

Among the flake debitage, it is interesting to note an increase in the proportion of utilized and retouched flakes from the early to the late stages of the reduction sequence: 10% of the primary decortication flakes are utilized or retouched; of the secondary decortication flakes, 18% are utilized or retouched, and the percentages of utilized and retouched primary flakes and thinning flakes are 50% and 60%, respectively (Table 9.2). If the sample is representative, selection of relatively thin flakes for spe-

TABLE 9.1
Provenience of Debitage from Edwin Harness Mound

Provenience / *Debitage Type*	*Fea. 1*	*Fea. 4*	*Fea. 11, PM 4*	*Fea. 13, PM 1*	*Fea. 17*	*Fea. 30*	*PM 9*	*PM 11*	*PM 14*	*PM 26*	*PM 27*	*PM 69*	*PM 70*	*PM 72*	*PM 76*	*N547.5 E490, base of level 13, fired area in SW corner*	*N547.5 E487.5, surface*	*N527.5 E496.5, 12.5 NS × 7.5 EW frontloaded area #3*	*N535 E500, 8.4 NS × 5.5 EW*	*Surface, general*	*Disturbed and Unknown backfill*	*Total No.*	*%*
Core Fragments				1																1	3	5	5.5
Checked Pebbles	1					1						1	1		1						8	13	14.3
Primary Decort. Flakes		2				4			1	1	1				1	1	1	1	1	1	14	29	31.9
Secondary Decort. Flakes	1			1		4												1		1	3	11	12.1
Primary Flakes	2			1		1	1		1											2	2	10	11.0
Thinning Flakes			1																	3	1	5	5.5
Uncertain					2	5	1	1	1					1			2				5	18	19.8
Total	4	2	1	3	2	15	2	1	3	1	1	1	1	1	2	1	3	2	1	8	36	91	100.1

TABLE 9.2
Correlation of Flake Type and Technique of Flake Removal, Edwin Harness Mound

Flake Type \ *Technique of Flake Removal*		*Hard Hammer Percussion*	*Soft Hammer Percussion*	*Indeterminate Percussion*	*Indirect Percussion/ Pressure*	*Platform missing*	*Uncertain*	*Total No.*	*Total %*
Primary Decort.	T	10	1	1		15	2	29	
	U	1						1	39.7
	R					2		2	
Secondary Decort.	T	4				7		11	
	U	1						1	15.1
	R					1		1	
Primary	T	1	2			7		10	
	U	1	2			2		5	13.7
	R								
Thinning	T		4			1		5	
	U		1					1	6.8
	R		2					2	
Uncertain	T	3		1	1	7	6	18	
	U					1		1	24.7
	R								
Total	T	18	7	2	1	37	8	73	100.0
	U	3	3			3		9	12.3
	R		2			3		5	6.8
%		24.7	9.6	2.7	1.4	50.7	11.0		100.1

T = Totals
U = Utilized
R = Retouched

cific or perhaps multiple tasks is suggested. Primary and thinning flakes should have more acute edge angles and sharper edges than decortication flakes. Hence, if the sample reflects intentional selection of flake debitage for tool use, marginal sharpness seems to have been a more important consideration than strength. This in turn suggests a greater association with cutting tasks than with scraping tasks, which parallels the apparent utilization of bladelets in the Edwin Harness Mound and vicinity.

Technique of flake removal is correlated with flake type in Table 9.2 and with raw material in Table 9.4. The total number of flakes in the sample is quite small and the often diagnostic platforms of half are missing. Nevertheless, a few observations can be made on the data bearing on differential tool use in the knapping sequence.

Decortication waste flakes are dominated by hard hammer percussion, with a noticeable reduction in the number of hard hammer percussion detached flakes from the primary to the secondary decortication stages. Only one primary flake and no thinning flakes in the sample were detached by this technique. There is a corresponding increase in the use of soft hammer percussion from the stage of primary flake detachment to the thinning stage. Only one soft hammer percussion detached flake is represented in the early stages of decortication. Thus, hard hammers were apparently employed in the initial stages of knapping at least cortical raw material and the shift to a soft hammer occurred when the mass of the blank or preform was being reduced by the removal of primary flakes. Indirect percussion or pressure is represented by a single flake of indeterminate type. However, this flake removal technique is often employed in the final stages of the reduction sequence when sharpening flakes are detached. "Soft" cortex, such as is commonly present on chert nodules that have not been transported far from their outcrop areas by natural agencies, was not observed in the debitage sample. Thus, the presence of cortex on the dorsal faces of flakes and on other debitage is presumed to represent pebble raw material.

In the debitage sample, a reduction in the proportion of specimens with remnant pebble cortex is observable from the checked pebble stage (100.0% pebble material) to the primary decortication stage (79.3%) to the secondary decortication stage (72.7%) to the primary flake stage (10.0%) to the final thinning stage (0.0%). Seemingly contradictory is the lack of a 100% representation of pebble material in the decortication stages. *Decortication*, however, refers not only to the detachment of pebble cortex but to the removal of portions of very thin patinas resulting from frost wedging as well. Such frost-cracked material may have occurred as bedded chert in outcrop locations that served as prehistoric quarries. Otherwise, the

TABLE 9.3
Correlation of Debitage Type and Flint/Chert Variety, Edwin Harness Mound

Debitage Type \ *Flint/Chert Variety*		*Delaware*	*Brush Creek*	*Flint Ridge*	*Cedarville-Guelph*	*Columbus*	*Brassfield*	*Upper Mercer or Boggs*	*Local Pebble Chert*	*Unknown*	*Total* No.	*Total* %
Core Fragments	T	2					1		1	1	5	
	U								1		1	5.5
	R											
Checked Pebbles	T	3	1		2		1		6		13	
	U											14.3
	R											
Primary Decort. Flakes	T	7	2	1	1			1	14	3	29	
	U							1			1	31.9
	R		1	1							2	
Secondary Decort. Flakes	T	2	2			3			3	1	11	
	U		1								1	12.1
	R									1	1	
Primary Flakes	T	2	1	2	1				1	3	10	
	U	1	1	2	1						5	11.0
	R											
Thinning	T		2	2						1	5	
	U									1	1	5.5
	R		1	1							2	
Uncertain	T	1	2	5					5	5	18	
	U			1							1	19.8
	R											
Total	T	17	10	10	4	3	2	1	30	14	91	100.1
	U	1	2	3	1			1	1	1	10	11.0
	R		2	2						1	5	5.5
%		18.7	11.0	11.0	4.4	3.3	2.2	1.1	33.0	15.4		100.1

T = Totals
U = Utilized
R = Retouched

debitage assemblage reflects a bifacial artifact industry that was dominated by pebble raw material. This is evident in the distribution of pebble material throughout the knapping sequence and in reduced numbers of flakes from the beginning to the end of the sequence, suggesting that not a great deal of bifacial thinning occurred beyond the decortication stage. Furthermore, no sharpening flakes were recognized in the analyzed sample even though feature contents were consistently subjected to flotation appropriate to their recovery from a soil matrix. Their absence (or scarcity) suggests either that this advanced stage of artifact manufacture occurred at one or more off-site loci or that bifacial tools were considered finished products after the removal of thinning flakes. With this possible exception, the debitage reflects a rather homogeneous assemblage in that the same raw material apparently passed through the entire reduction sequence with neither significant inputs of additional raw material at any one stage in this sequence nor removal of blanks or preforms on their way to becoming finished artifacts.

Flint/chert raw material excavated from the Edwin Harness Mound is correlated with debitage type in Table 9.3 and with technique of flake removal in Table 9.4. Table 9.5 presents the frequency distribution of identified and unidentifiable flint varieties among the four analyzed collections, including questionable raw material and cortex identifications. Items of Flint Ridge flint were examined for the presence or absence of cortex for the Harness Mound sample only. Therefore, Flint Ridge pebble is underrepresented in Table 9.5. At least one specimen in Robert Harness's surface collection was observed with pebble cortex, but none were present in the excavated Harness Mound collection.

One striking feature of flint raw material utilization is

TABLE 9.4
Correlation of Technique of Flake Removal and Flint/Chert Variety, Edwin Harness Mound

Technique of Flake Removal / *Flint/Chert Variety*		*Delaware*	*Brush Creek*	*Flint Ridge*	*Cedarville-Guelph*	*Columbus*	*Upper Mercer or Boggs*	*Local Pebble Chert*	*Unknown*	*Total* No.	*Total* %
Hard Hammer Percussion	T	3	2			1	1	6	5	18	
	U		2				1			3	24.7
	R										
Soft Hammer Percussion	T	1	2	2	1				1	7	
	U			1	1				1	3	9.6
	R		1	1						2	
Indeterminate Percussion	T			1				1		2	
	U										2.7
	R										
Indirect Percussion/Pressure	T			1						1	
	U										1.4
	R										
Platform missing	T	7	5	6	1	2		9	7	37	
	U	1		2						3	50.7
	R		1	1					1	3	
Uncertain	T	1						7		8	
	U										11.0
	R										
Total	T	12	9	10	2	3	1	23	13	73	100.1
	U	1	2	3	1		1		1	9	12.3
	R		2	2					1	5	6.8
%		16.4	12.3	13.7	2.7	4.1	1.4	31.5	17.8		99.9

T = Totals
U = Utilized
R = Retouched

the dominance of Flint Ridge in all but the Harness Mound collection. Flint Ridge flint accounts for at least 93% of Harness's surface bladelets and bladelet cores. For Sites 18 and 25, 81% and 89% of the items, respectively, are of Flint Ridge flint.

This high-grade material also accounts for half of the excavated artifacts from the Harness Mound; all (17 bladelets and 1 bladelet core) are related to the bladelet industry. Only 2 Flint Ridge flakes (that are not necessarily associated with the bladelet industry) were recovered from the Harness Mound. Seven of the remaining 8 flakes are virtually identical in appearance. They may have been struck from the same core, which seems also to have been the parent core for 4 of the 23 bladelets and bladelet fragments recovered. At least 6 of these 7 were from the same feature (Feature 30). The single primary decortication flake of Flint Ridge probably represents the acquisition of bedded material without any (or with very little) knapping prior to transport. Two thinning and primary flakes each are not necessarily part of a bifacial reduction sequence; rather, they may have resulted from bladelet core preparation of a suitable preform. Five Flint Ridge flakes, "uncertain" as to flake type, may represent snapped fragments from attempted bladelet removal or flake segments detached in an effort to reshape one or more cores.

The association of Flint Ridge raw material with bladelet production is also evident, although not quantified, in the Site 18 and Site 25 collections. It is possible that the remarkably high proportion of Flint Ridge flint (and/or items related to the bladelet industry) in the surface material is due to selective collecting. Utilitarian artifacts and associated debitage of non-Flint Ridge materials are present, however, in all three collections. It therefore seems unlikely that selective collecting, had it occurred, *significantly* inflated the proportional representation of Flint Ridge.

The possibility exists that Flint Ridge flint occurred naturally in the vicinity of the site complex, having been transported there by natural agencies. As noted, at least one specimen in the Harness surface collection is indeed pebble material. James L. Murphy (letter to K. D. Vickery, April 22, 1982) cautions that some flint of the Vanport limestone member in Jackson County to the south and east of the Harness site complex is high-grade and resembles material from the famous Flint Ridge deposits in Licking County and vicinity, to the north and east of Chillicothe. Being located in the ancient Teays valley, this more southern variety may have been transported naturally into the area. If the flint being exploited at Harness had been carried to the area in this manner, however, one would expect to find at least some low-grade, weathered material, or at least a range of variation in quality. Because nearly all of the flint is high-grade, its source area for at least most of the Flint Ridge flint from the Harness site complex was probably the ridge proper or its environs, and it was likely transported by human agency.

Of interest in the investigation of flint raw material procurement strategies is the representation of varieties that would have been available locally as redeposited pebble material. This problem was approached in three ways: 1) each archaeological specimen was tabulated according to whether or not pebble cortex was present; 2) pebbles collected from a gravel bar along the Scioto River close to the Harness Mound were examined for identifiable varieties; and 3) non-artifactual chert pebbles from the Harness Mound excavation in broken and unbroken conditions were identified according to variety.

Table 9.5 indicates the incidence of pebble chert in the archaeological collections. This form of raw material would have been available locally, and most or all of the pebble specimens were likely collected in the immediate vicinity of the Harness site complex. The present analysis would not have detected the acquisition of pebble raw material from distant locales, if such procurement had indeed occurred. Debitage and artifacts lacking cortical remnants are ambiguous with respect to context of acquisition (in situ or redeposited). The lack of cortex may simply represent decorticated but locally acquired pebble chert rather than "exotic" raw material obtained directly or indirectly from outcrop locations at varying distances from the site complex. No more than 28% of the unidentified flint retains pebble cortex, suggesting at least some decortication at the site(s) of acquisition.

The impression remains that much unidentified "Local Pebble" and "Unknown" chert is of local origin, having been dislodged from distant outcrop areas to the north, east, and south and then transported by glaciers and ancient and modern drainage systems. Such pebble chert presently occurs in gravel bars along rivers and in Wisconsin and Illinoian till and outwash in the site complex vicinity.

Included with unidentified flint are 6 flakes with a thin, smooth, white-tan cortex and 10 decorticated flakes of identical raw material from Site 25 that is dark brown, homogeneous, very fine grained and occasionally pitted. A bladelet core in one of Harness's surface collections may be of the same flint variety. Although direct comparisons were not made, this high-grade material seems to be the same as several bladelets and debitage apparently associated with bladelet production excavated from the Hopewell site of Mound City in the Chillicothe vicinity and present among surface collected material in Clermont and Hamilton counties in southwestern Ohio. One specimen from a workshop near the Turner site in Hamilton County was thin sectioned by Timothy S. Dalbey, who identified it with the Delaware Formation based in part on similarities between its photomicrograph and that from the Kuenzli Quarry at Delaware illustrated by Stout and Schoenlaub (1945: Pl. III).

The possible link between three "classic" Hopewell sites through the co-occurrence of this distinctive flint variety merits further investigation, particularly in view of its apparently exclusive use for bladelet production. If the Delaware identification is correct, it is not necessarily exotic to the area. It is represented as unidentified because geologically documented comparative samples are not currently available.

Also from Site 25 are one pebble flake and three flakes without pebble cortex of identical, high-grade but unidentified material that is translucent and variegated (with reddish tinges as part of the coloration). These are likely exotic to at least the region from which most of the Harness site complex flint/chert was acquired, as is at least one flake in the excavated Harness Mound collection.

A sample of 100 chert pebbles was randomly selected from among several hundred collected at a gravel bar near the Harness Mound during the summer of 1976. The results of identifying the flint/chert varieties represented are given in Table 9.5, which shows Delaware present in abundance (46%), followed by Cedarville-Guelph (8%), Bisher (3%), and Columbus, Brassfield, and Upper Mercer (1% each). Forty percent were unidentifiable. Identifications of non-artifactual chert pebbles excavated from the Harness Mound are also presented in Table 9.5.

Apart from Flint Ridge and unidentifiable varieties, the most abundantly represented raw material is Delaware. Delaware dominates the excavated debitage and the non-bladelet artifacts and is prominently represented among the debitage from Sites 18 and 25. This suggests that it was the most important raw material exploited for tool production unassociated with the bladelet industry, although small amounts were exploited for the latter.

Delaware, Columbus, and Cedarville-Guelph all outcrop in areas presently drained by the Scioto River and its tributaries north and northwest of the Harness site complex. It is likely that they were dislodged by the river and carried southward where they were then available locally as pebble material in the site vicinity. All three varieties were present in the pebbles collected along the Scioto River, with Delaware accounting for almost half of the sample. The non-cultural pebbles recovered from the

TABLE 9.5

Frequency Distribution of Flint/Chert Varieties for Cultural Collection and Comparative Local Scioto River Gravel Pebbles

	EDWIN HARNESS MOUND			*ROBERT HARNESS Surface Collection*					*TOTALS FOR CULTURAL MATERIALS*				
	Artifacts	*Debitage*	*Pebbles*	Artifacts	*Bladelets & Cores*	*Q†*	*Debitage sites #18 & #25*	*Q†*	*Subtotals*	*Q†*	*Total*	*% Total non-flint Ridge*	*Scioto River Gravels (Pebbles)*
Flint Ridge	18	10		7	1,103	2	1,151		2,289	2	2,291**		
Flint Ridge (Pebble)							1		1		1		
Delaware	2	3		1	18	2	7	1	31	3	34	7.8	
Delaware (Pebble)	4	14	8		1	1*		2*	27	3	30	6.8	46
Brush Creek	2	7		1	1		4	3	15	3	18	4.1	
Brush Creek (Pebble)	1	3	2				2		8		8	1.8	
Zaleski	1			1	1	1	4		7	1	8	1.8	
Zaleski (Pebble)					1		4	1*	5	1	6	1.4	
Upper Mercer				2		1	4	1	6	2	8	1.8	
Upper Mercer (Pebble)					1			1*	1	1	2	0.5	1
Upper Mercer or Zaleski	1				2		2		5		5	1.1	
Upper Mercer or Zaleski (Pebble)							1		1		1	0.2	
Boggs								5		5	5	1.1	
Boggs (Pebble)						1				1	1	0.2	
Upper Mercer or Boggs		1							1		1	0.2	
Knife River						2	3	2	3	4	7	1.6	
Harrison County					1	2	1	1	2	3	5	1.1	
Cedarville-Guelph	1	1							2		2	0.5	
Cedarville-Guelph (Pebble)		3	4						7		7	1.6	8
Columbus		1							1		1	0.2	
Columbus (Pebble)		2							2		2	0.5	1
Prout (Pebble)	1						1	1	2	1	3	0.7	
Brassfield (Pebble)		2							2		2	0.5	1
Bisher				1		1	1		2	1	3	0.7	
Bisher (Pebble)													3
Plum Run (Pebble)							1		1		1	0.2	
Kanawha Black (Pebble)							1		1		1	0.2	
Unknown	4	14		8	36		111		173		173	39.5	
Local Pebble	1	30	40	1	2		29	1*	103	1	104	23.7	40
Total	36	91	54	22	1,167	13	1,328	19	2,698	32	2,730	99.8	100

*Probably pebble; flint identification definite

**Flint Ridge variety forms 83.9% of total identified cultural objects

†Questionable

Harness Mound excavation included both Delaware and Cedarville-Guelph. In the excavated debitage sample, the proportions of Delaware, Cedarville-Guelph, and Columbus that are demonstrably pebble-derived are 82.4%, 75.0%, and 66.7%, respectively. These data indicate that predominantly pebble material was used for bifacial artifact manufacture, although the presence of bladelets and bladelet cores of Delaware in the surface collections may represent direct acquisition from outcrop in order to exercise some selectivity regarding quality and perhaps size.

Three flint varieties outcrop to the east and south of the Harness site complex, in the path of the Pleistocene Teays River and its tributaries. Brush Creek and Zaleski in Ohio and Kanawha Black in West Virginia were all subject to displacement by the westward and—in the site vicinity and immediately south of it—northward flowing Teays, which undoubtedly carried at least these three varieties to and through the area. The most important of these varieties for chipped stone tool manufacture was apparently Brush Creek. Like Delaware, Brush Creek was used for limited bladelet production, as suggested from the occurrence of one Brush Creek bladelet each in the excavated sample and in Harness's surface collection. However, it is more abundant in the form of debitage not necessarily associated with bladelet production and ranks second to Delaware among the identified varieties in the total sample. Ranking third is Zaleski, which is the closest source of bedded flint to the Harness site complex.

None of these three flint varieties is represented in the Scioto River pebble chert sample, but nearly half of the Zaleski flint in the total sample is demonstrably pebble material and the only specimen of Kanawha Black also retains pebble cortex.

The presence of Brush Creek in the mound as unmodified pebbles indicates that it was naturally occurring and locally available. It is represented by one checked pebble in the excavated debitage sample, suggesting that it was exploited in pebble form. Nevertheless, the lowest proportion of demonstrably pebble material of all the locally available varieties is Brush Creek. Only 30% of the excavated Brush Creek debitage and 26% of this variety in the total sample retains pebble cortex. This may represent the transportation of pebble material to the mound and vicinity in partially decorticated conditions, probably in conjunction with at least some direct acquisition of tabular material from the source area (perhaps destined for bladelet production). If such were the case, the procurement strategies for both Brush Creek and Delaware were very similar.

Relatively close to the Harness site complex are source areas of Bisher and Brassfield to the west and Upper Mercer to the east. The presence of all of these varieties in the Scioto River pebble chert sample suggests that they were carried into the area naturally. The Harness surface collection contains a bladelet core of pebble Upper Mercer and a bladelet of questionably identified Upper Mercer in addition to two bladelets of either Upper Mercer or Zaleski. Thus, Upper Mercer is yet another flint variety that was used for bladelet production in the Harness Mound vicinity, although apparently in very small quantities. Even though available in the local area in pebble form, bedded material from Upper Mercer outcrops would have been accessible to groups traveling to or from Flint Ridge deposits yet farther north.

Also present in small quantities are Bisher and Brassfield. One of the Harness surface collected bladelet cores is probably Bisher, but no bladelets of this variety were recognized. Bisher is noticeably grainier than such high-quality varieties as Harrison County, Knife River, Flint Ridge, and most Upper Mercer and Zaleski. Brassfield has many fossil inclusions that would have deflected shock waves traveling through a core, causing bladelets and flakes to detach unpredictably. These may have been prehistoric considerations in selecting predominantly other varieties for the bladelet industry.

With the possible exception of one stemmed knife of either Upper Mercer or Zaleski, neither Upper Mercer nor Bisher is represented among the excavated artifacts and debitage, although both are present in the Scioto River pebble sample. Given their low density in this sample and the small quantity of excavated debitage, however, this lack of representation is probably due to sampling error. By the same token, the occurrence of Bisher, Upper Mercer, and Zaleski artifacts unrepresented by debitage in the excavated collection may also be due to sampling problems because the Harness surface material contains debitage of each. Brassfield, Columbus, and Upper Mercer or Boggs are represented by excavated debitage and no artifacts, but again the small amounts present suggest sampling error.

Outcropping far to the north and present in the sample in such small quantities that intentional procurement seems remote are Plum Run (in northeastern Ohio) and Prout (in the extreme north-central part of the state). The mechanism or mechanisms by which these varieties were transported to south-central Ohio is unknown. Glacial action is plausible in the case of Prout but cannot account for the presence of Plum Run. Unless misidentified, this item may have been brought to the Harness site complex by visitors carrying indigenous items with them for trading along the way. This may also account for the presence of one Plum Run specimen at nearby Mound City (Vickery 1983).

Exotic to Ohio are Harrison County and Knife River flint, both of which are present in the Site 25 collection and, for Harrison County only, among Harness's surface collected bladelets and bladelet cores. With its source area in extreme south-central Indiana, Harrison County flint was available ca. 200 miles away, while Knife River flint, if obtained from deposits in west-central North Dakota, was at least 1,100 miles distant from the Harness site complex. Unless these varieties were brought here by visiting groups, their occurrence in south-central Ohio resulted from direct acquisition or long-distance trade. If the former, they were apparently imported in small amounts (perhaps each representing a single episode of acquisition) and likely specifically for bladelet, cache blade, and/or ceremonial spear point production.

Summary of Flint/Chert Raw Material Utilization

In the vicinity of the Harness Mound, Flint Ridge flint was the most heavily relied upon raw material for bladelet production. Though some utilitarian items of Flint Ridge were manufactured—as exemplified by projectile points, a scraper, and unidentifiable biface fragments in the Site 18 and Site 25 surface collections—the main purpose of its importation seems to have been to maintain a relatively large supply of high quality raw material on hand for bladelet production. Some of this material may have been available locally, the Teays River perhaps having transported it northward. Nearly all of the Flint Ridge flint observed in the collections, however, was high-grade material, which, in combination with its general lack of pebble cortex, suggests that procurement was predominantly or exclusively from bedded deposits, probably to the north and slightly east of the site complex. Its abundance and quality suggest that procurement was both systematic and selective.

Supplementing Flint Ridge for bladelet production were Harrison County and Knife River flint, along with small quantities of flint varieties available locally or a relatively short distance away (e.g., Delaware, Brush Creek, Upper Mercer). It is likely that some Delaware and Brush Creek were acquired from outcrop.

The bladelet industry is represented in the excavated sample from the Harness Mound, but this collection mainly reflects bifacial reduction associated with the manufacture of utilitarian artifacts.

There is a general correspondence between the debitage, artifacts, and naturally occurring pebbles from the Harness Mound and the Scioto River pebble chert samples. There is also a fairly even distribution of flint varieties throughout the reduction sequence (as represented by the various debitage types). This suggests that locally available pebble chert was exploited for non-bladelet and very limited bladelet manufacture.

The territory of systematic flint and chert resource exploitation was probably a linear, north-south one that assumed the configuration of an ellipse roughly 150 miles north-south by 80 miles east-west, with the Harness site complex located near the west-central periphery (see Fig. 9.1). In addition, trade arrangements and/or forays were undertaken to acquire certain high-quality varieties from greater distances away. Visiting groups bringing indigenous flint with them likely supplemented the raw material acquired in this manner.

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10 DISCUSSION AND CONCLUSIONS

Environment and Subsistence

The botanical, faunal, molluscan, and soils analyses are all consistent. The environment of the Central Scioto when the Harness Big House was used and first covered over was very similar to that found in the area in the eighteenth century, a forest cover with some relatively open areas and pocket prairies. Within 3 km of the site on Gordon's (1966) map of vegetation at contact are bottomland hardwoods, oak-sugar maple, oak savannas, and mixed mesophytic forests. Although the debris found at the site reflects specialized and public activities rather than everyday subsistence, it does contain evidence for the use of the several parts of the relatively local environments: scale fish, shell fish, and building materials from the river and the hills; deer, raccoon, turkey and other birds, and small mammals from the woodland and edge areas.

The evidence of plant foods comes both from skeletal analysis and botanical samples. Skeletal analysis (Bender, Baerreis, and Steventon 1981) demonstrates that, on the basis of present evidence, corn became a regular part of the diet of humans and of deer after the Middle Woodland time period in the sites tested from Illinois, Ohio, and Wisconsin. Three individuals from Edwin Harness and five from the large Seip Mound were included in the study. The skeletal evidence from Edwin Harness is consistent with the amount of corn recovered. The *Zea mays* found at Harness was in contexts in which it can easily be interpreted as being a special purpose plant in the same sense as tobacco or other known ceremonially important plants. This is demonstrated within Feature 60 where fragments of *Zea mays* were found and the ratio of Carbon-13 to Carbon-12 in the bones of the individual interred was −22.7%. This value of the ratio is interpreted as indicating no significant amount of corn in the diet (ibid.).

Wild fruits and seeds were also identified in the Harness botanical samples analyzed. Of particular interest are the small unidentifiable seeds which composed high percentages of some of the flotation samples. The unavoidably biased information from Harness does fit the best present estimate of the subsistence pattern of Scioto Hopewell peoples: gathering, hunting, and gardening (Ford 1979). Additional work needs to be done, particularly with respect to the position within the economy of the locally available plants which bear starchy seeds.

Relative Intrasite Chronology

One of the primary tasks of our excavation was to seek stratigraphic or other physical evidence for rebuilding or multiple building stages of the structure at the base of the mound. All the evidence which we found supports a single stage of both construction and use of the major structure. This is to be distinguished from the possible use through time of the knoll itself and the various building stages of the mound which were placed over the building.

There are two somewhat different sequences of construction which can be interpreted from the known data. They center on the time lapse between the preparation and use of the sub-main floor area, Feature 33, and its underlying base, Feature 50. No building posts were found that originated on Feature 33; it appears that only activities which would result in few if any subfloor remains took place on the surface of this mixed clay floor.

This surface was used, if at all, before the Big House was completed. Large areas of relatively featureless "Floor" which had been separately covered by primary mounds were recorded by Shetrone at either end of Hopewell Mound 25 (Shetrone 1926). Within the Seip Earthworks in Locality 23, which is immediately west of the area excavated by the Ohio Historical Society 1971–1977 (Baby and Langlois 1979), we have uncovered a plaza-like area which was also relatively featureless and had been separately covered (Greber and D. Griffin 1982). There were undoubtably other such places in central Ohio. Thus the existence and use of such a space is not unusual.

Feature 33 underlies the East Section and extends approximately 13 m north and 10 m west of this section. This is an area of particular interest because of the somewhat anomolous character of the burial population associated with the corresponding area in the Seip Big House. At present we cannot identify the nature of the population associated with the East Section at Harness. Hopefully further work will aid in deciding whether the location of Feature 33 with respect to the East Section is of some significance.

With respect to possible construction phases of the major structure, we did not find any evidence which would indicate that the surface of the knoll had been cleared in stages. Feature 3C, which underlay the entire structure, was the same everywhere it was found. It is possible that evidence of differences existed originally in the heavily disturbed areas, and that the area under Features 50 and 33 had been cleared first, the remainder later. However, in addition to the physical characteristics of Feature 3C, there is a design feature which makes me tend not to accept two separate clearings. The heavy gravel outer mantle had been placed essentially at the edges of Feature 3C, which would not have been visible when the wall was placed. This and the repetition of the pattern at Seip do appear to indicate there was some basic preconceived design for the total complex.

Mills (1907:137) states that the posts were placed and the floor built around them. We did not have the opportunity to see the join of Feature 3, a puddled clay floor, and pristine building posts. However, the character of this main upper floor and the constructions of tomb remains and outer posts which we did find is consistent with Mills's observation. I do think it would have been possible to have constructed post holes through the softer clays of Features 33 and 50.

In sum, the surface of the knoll could have been partially cleared, a special purpose ceremonial area constructed, used, and left. Later, additional clearing and cleaning of the first area, placement of major structural posts (perhaps beginning construction on the east), and laying of the main floor of the complete house followed. Or, what appears more likely, the complete knoll was cleared, and a special area made, perhaps with materials of special significance from previous ceremonies. When the appropriate ceremonies were completed, the major structural posts were placed, the main floor layers put down, and the floor features constructed, all in a relatively short span of time. In considering this second as more likely, I am regarding the radiocarbon assay DIC-662 as a product of old trees and/or chance.

The Pattern of the Big House

The basic plan of the Big House, three nearly rectangular and one circular section, is in contrast with the design of the earthwork which contains three sections that are parts of circles and one section that is square. Out of both designs come the deliberate use of 3, 4, 7, and 48 (4 × 12) construction elements. Within the Big House itself the two larger sections, which are similar in outline, differ in the stylistic implementation of the basic design. The two smaller sections differ in basic outline. Color appears to have been used to distinguish structural posts on perimeters or entranceways in the three smaller sections and the middle hallways. In the North Section three structural posts in the southeast corner and one immediately west of the geometric center were also marked with red stains.

The non-structural posts were distributed differently among the sections. The North and Middle Sections each had an irregular line just west of the building proper. Other small, apparently colored posts were immediately north of the North Section. A cluster of small stained posts was on the east side of the Middle Section, while a cluster of medium and small stained posts was on and immediately west of the center of the North Section. In contrast, at the center of the Middle Section was a long, burning fire. There is also a contrast between the usual small scale (total content) of the deposits found in many places on the floors within and about the Big House and those which were found by earlier excavators about the center of the North Section. Comparison of the placement of these deposits with respect to the central focus posts suggests an east-west division in the design of the center.

Thus, there are differences in scale, design, and activity remains within the four sections. These differences indicate a likely difference in style if not in actual content of some of the activities which took place in each of the four sections. I have concluded, based on my analysis of burial attributes, that each section of the Big House was the social space of a sub-group within the total society which supported the Big House (Greber 1979). The data given here is separate from that of individual burial attributes. This data, on the design of the complex, is consistent with my additional conclusion that each sub-group represented in the Big House had separate social responsibilities within the whole society.

The Pattern at Seip

The Harness building design shown in Figure 3.2 was placed over the map of tombs and floor features found at the base of the large Seip Mound (see Greber 1979:Fig. 1A). It was necessary to rotate the Middle Section 90°. The results of the superposition are given in Figure 10.1. I consider this an excellent fit. This new estimated map suggests a refinement of the original groupings which I had used in studying the social sub-groupings associated with this Seip mound. The section which corresponds to the Harness East Section groups together a small number of individuals who have stood out among the general population associated with Lobe 1 (West Section) (Greber 1976:76). Using the ranksums calculated for the individuals whose tombs were found on the floor of the Seip Big House (Greber 1976:53, 237–253), I calculated new median ranksums using now four separate units. The small group of six individuals in the North Section of the Seip Big House has the highest median ranksum but with a large confidence interval (see Table 10.1). The field notes of the Ohio Historical Society excavations at the large Seip Mound stated very clearly that the primary mound, which covered the largest section (Lobe 1), also covered this small north extension (Shetrone et al. 1925–1928). If this were strictly true, then perhaps this high ranking group has a special relationship with the major group within the Lobe. Such a small group would have a different social character from that of the larger groups associated with the other sections of the Big House.

A review of the descriptions of the non-perishable artifacts found with the remains of these individuals suggests that, as a group, these individuals may have been associated with special rituals (Greber 1976:Individuals 37, 39, 44, 45, 46, 51). With the remains of Individual 39 were a miniature copper plate and earspools and four copper covered stone buttons. Above the roof of the tomb pieces of a small pottery human head effigy were found. This tomb was unusual in construction. It also had been covered by a primary with two gravel strata. The primary

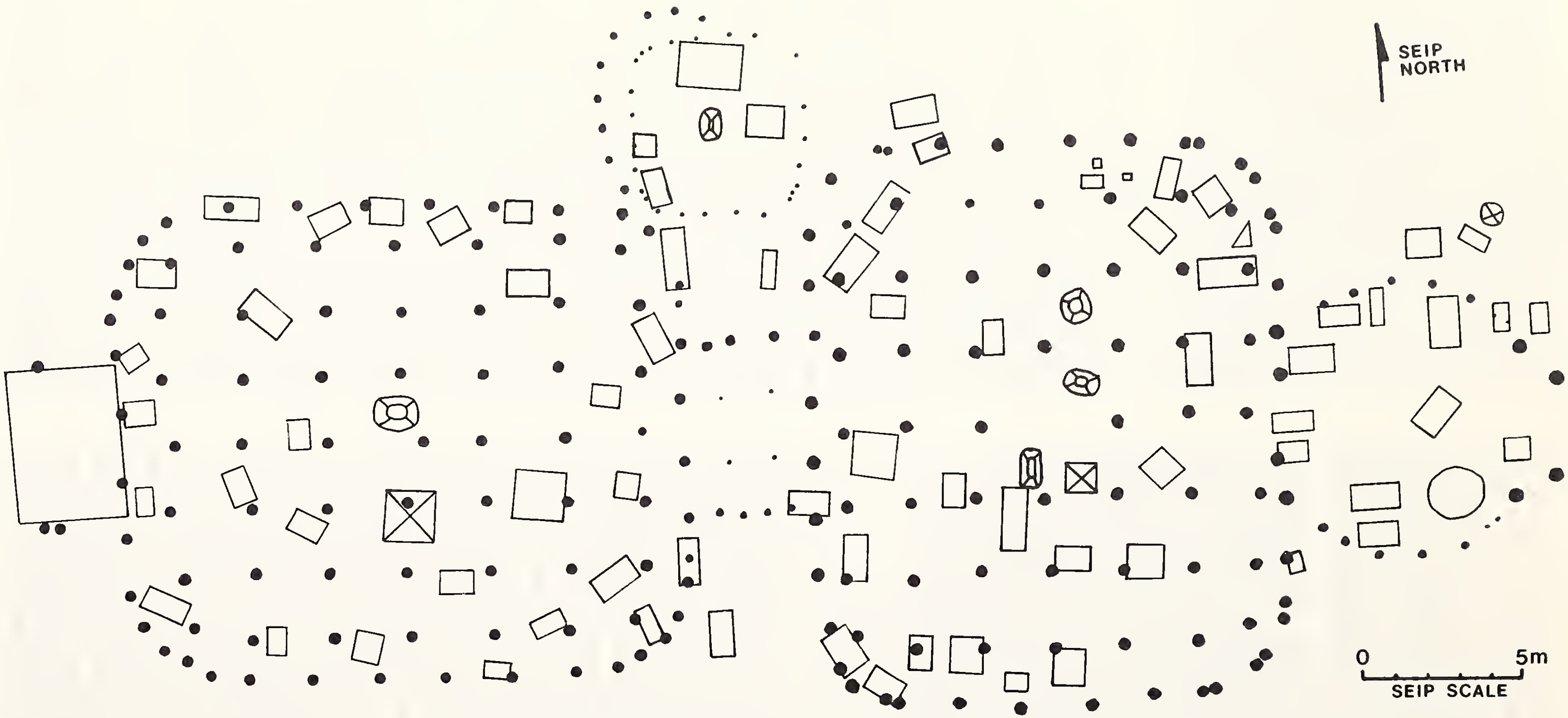

Fig. 10.1. Estimated floor plan of Seip Big House. Post hole plan of the major structure found at the base of Edwin Harness Mound (see Fig. 3.1) superimposed upon the plan of the tombs and other floor features found at the base of Seip Mound 1 (Pricer) (see Greber 1976: Fig. 6A). The plan of the Harness Middle Structure has been rotated 90°.

TABLE 10.1
Values of Ranksum F for Seip Mound 1 (Pricer)
(Based on calculations in Greber 1976)

House Section	*No. of Individuals*	*Median Ranksum*	*97% Confidence Interval*	*Confidence Interval Length*	*Highest Value*	*Lowest Value*
West (Lobe 1)	41	607	554 to 667	113.0	371.0	743.5
North (Lobe 1)	6	555	412 to 685	273.0	411.5	685.0
Middle (Lobe 2)	37	656	628 to 689.5	61.5	440.0	750.5
East (Lobe 3)	19	698	643 to 738.5	95.5	297.5	747.5

is described as covering two tombs, but which two is not clear. If it is that which Shetrone and Greenman called Grave 34, then the artifacts found with Individual 37 in this grave complement those of Individual 39. A diminuative copper crescent along with four pearl beads, one copper hemisphere, and two copper objects, called "possible effigies of the praying mantis" by Shetrone (Shetrone and Greenman 1931:407), were found. The latter may be metal working tools. The multiple burial (Individuals 44, 45, 46) was covered by a large primary mound with two sand strata, an unusual construction. Associated with Individual 44 were two copper celts; with Individual 45, approximately 20 pounds of galena, pearl beads, burned fabric, a copper celt, and pulley-type stone earspools; with Individual 46, nothing. Deposited with the bones of Individual 51 were a small, "fine" ocean shell container, a copper plate, earspools, and 50 fine pearl beads. Within the charcoal platform on which the bones had been deposited, three hollow 1-inch (2.54-cm) diameter copper hemispheres were found. I suggest that the miniature items, the copper hemispheres, the conch shell, and the galena may have been primarily used in rituals.

The four sections of the Seip Big House may have, at one time, been reflected in the design of the earthwork walls at Seip. There are some variations in the design of the five major earthwork complexes which I have considered as related: Seip and Baum in the Paint Creek Valley, Frankfort on North Fork, and Works East and Liberty in the main Scioto Valley. The most nearly complete maps for all these come from Squier and Davis (1848: Pls. XX, XXI). All five of these earthworks include complete squares, if we assume the square at Works East was intact before erosion by the lateral movement of the Scioto. All the complexes also contain one large incomplete circle. The next smaller circle is relatively complete except at Baum, which has an amorphous area joining two partial circles. There is an additional smaller partial circle at Works East and Liberty. An amorphous wall joins the small circle and the square at Seip. There were changes in building design and apparent social groupings at Seip as seen in the structures under the large mound and the smaller conjoined mound (Greber 1979, 1976). Changes appear to have been made in the earthwork walls. Perhaps these two changes are related. The order of the building of the walls and the significance of the design of the parts is currently being studied (Greber and Jargiello 1982). Based on types of variation in designs, the earthworks can be grouped by river valleys. On North Fork the design contains a square and two nearly complete circles; in the Paint Creek Valley each has a square, two circular parts with less geometrically identifiable joining walls; and in the Scioto Valley the designs contain a square and three circular elements.

Absolute Chronology

The radiocarbon dates presented in Table 3.2 are plotted in Figure 10.2 with comparative dates from the Russell Brown Mounds, which are part of the Liberty Earthwork Complex (Seeman and Soday 1980); from the McGraw site, which is on the west bank of the Scioto 8.5 km north of Liberty (Prufer 1968; Prufer et al. 1965); and from the Seip Earthwork Complex (Baby and Langlois 1979; Greber and D. Griffin 1982). Considering first the dates from the base of the Edwin Harness Mound, we can group several of these into reasonable stratigraphic units: the four dates associated with the Big House itself (Features 19, 30, and P.M. 32); those from areas outside the house but on the main, heavy puddled clay floor (Features 17, 31, 62); and the single one from the northern activity area (Feature 53A). Since the radiocarbon years represent a statistical mean, a group average mean can be calculated using the standard deviation associated with each mean as its weighting factor. The weighted average mean for the use of the Big House is 1641 ± 32 radiocarbon years B.P. (A.D. 309 ± 32). The outer areas average to 1619 ± 35 radiocarbon years B.P. (A.D. 331 ± 35); and the single date for the north area is A.D. 450 ± 50. There is of course no justification for computing such averages if the features associated with the radiocarbon assays are not judged to represent a reasonably discrete single cultural time. If all activities on the heavy clay floor are assumed to be culturally contemporaneous, the corresponding weighted mean is 1632 ± 24 radiocarbon years B.P. (A.D. 318 ± 24). It should be noted that the

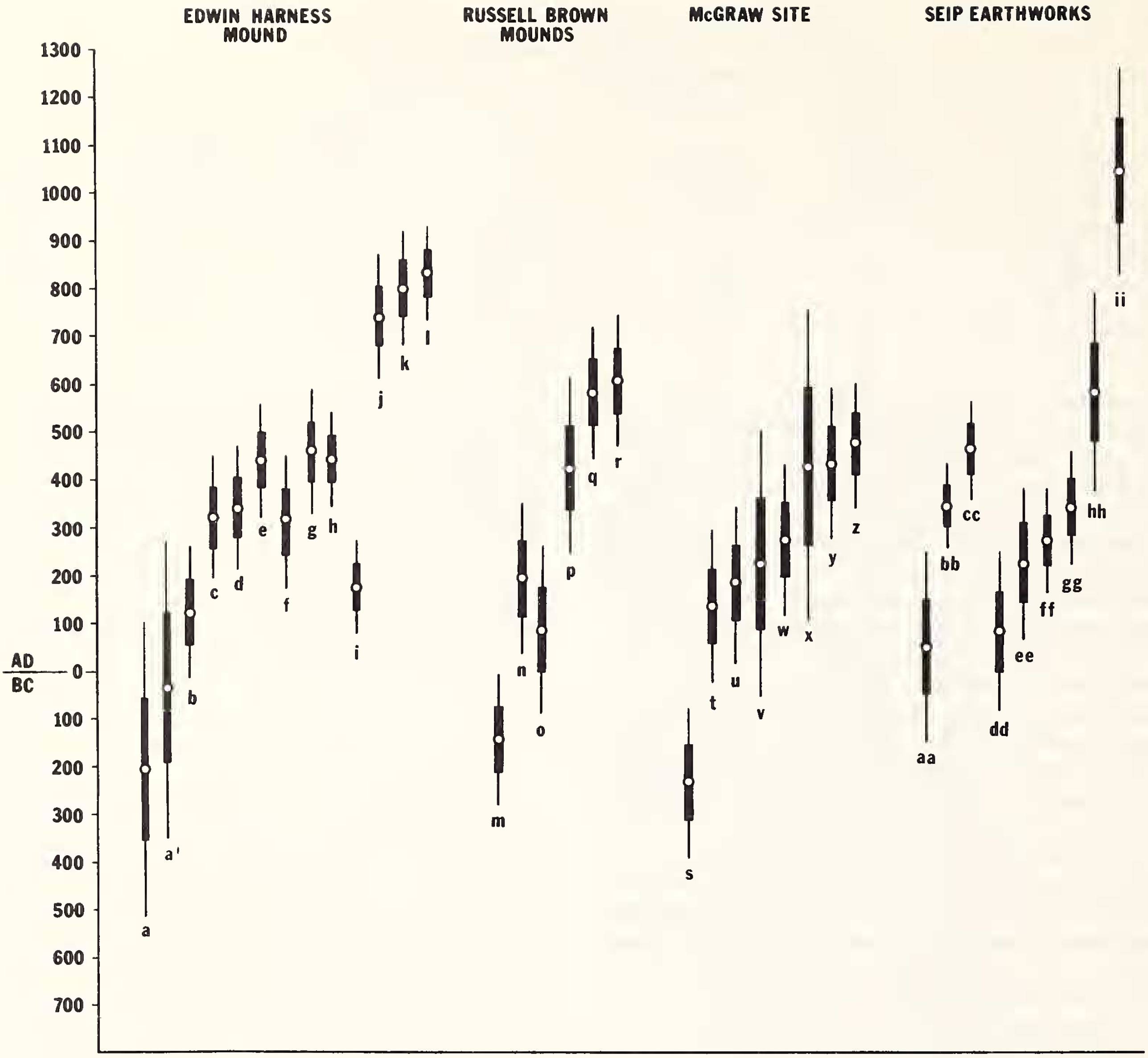

Fig. 10.2. Radiocarbon dates plotted as mean calendrical years with one and two standard deviations noted. (See Key to Fig. 10.2 next page.)

apparent increase in precision of this latter date is the result of averaging dates judged to represent contemporaneous cultural events. If this assumption is accepted, the odds are better than 2 to 1 that the actual date represented by this weighted mean is between A.D. 294 and A.D. 342. Additional dates will be added to the sample as dating techniques and resources allow. This further work may indicate whether or not the shift in weighted means for the floor groupings is a coincidence. Based on the present sample size the best estimate for the time interval which encompassed the construction and use of the area at the base of the Edwin Harness Mound is centered around A.D. 300.

Unfortunately there are not enough dates to judge the time which intervened between the use of the floor and the final capping of the top of the mound. The dates obtained from the outer strata placed against the lower edges of the mound do appear to indicate that the site, as part of the earthwork complex, was used for many years.

Seeman's analysis of the available radiocarbon dates from the Russell Brown Mounds (Seeman and Soday 1980) places the use of these mounds probably before (Mounds 1 and 2) and after (Mound 3) the use of the main Edwin Harness floor. The sample of dates from these smaller mounds is limited, but the use of the earthwork area over such a time span is quite reasonable. A number of interesting questions are posed both by the dates obtained from the outer features at Edwin Harness and by the type of materials being placed against the mound. The dark, rock laden soils in Features 69 and 69A do not correspond to any other major mound strata found in the above four mounds; however, they do appear to resemble feature fill

KEY
Figure 10.2

Site	Lab. No.	Provenience	Calendrical Year
Harness			
a	DIC-662	Under Feature 3	200 B.C. ± 155
a′	DIC-662	Under Feature 3	30 B.C. ± 155
b	DIC-665	PM 32	A.D. 130 ± 70
c	DIC-663	Feature 19	A.D. 330 ± 65
d	DIC-664 rerun	Feature 30	A.D. 350 ± 65
e	DIC-664	Feature 30	A.D. 450 ± 60
f	DIC-802	Feature 31	A.D. 320 ± 70
g	DIC-661	Feature 17	A.D. 460 ± 65
h	DIC-860	Feature 53A	A.D. 450 ± 50
i	DIC-1187	Feature 62	A.D. 180 ± 50
j	DIC-1635	Feature 56	A.D. 750 ± 65
k	DIC-1188	Feature 81	A.D. 810 ± 60
l	DIC-1190	Feature 55	A.D. 840 ± 50
Russell Brown			
m	UCLA-244B	Mound 1, Burned zone	140 B.C. ± 70
n	UCLA-244A	Mound 1, Feature 210	A.D. 200 ± 80
o	UCLA-245	Mound 2, Feature 73	A.D. 90 ± 90
p	UCLA-246C	Mound 3, Feature 13	A.D. 430 ± 90
q	UCLA-246B	Mound 3, Feature 13	A.D. 590 ± 70
r	UCLA-246A	Mound 3, Feature 13	A.D. 615 ± 70
McGraw			
s	UCLA-685	Excavation unit B-1	230 B.C. ± 80
t	UCLA-679A	Excavation unit D-1	A.D. 140 ± 80
u	UCLA-679B	Excavation unit D-1	A.D. 190 ± 80
v	M-1558	Excavation unit D	A.D. 230 ± 140
w	UCLA-688	Excavation unit B-1	A.D. 280 ± 80
x	OWU-62	Excavation unit D-2	A.D. 435 ± 166
y	UCLA-679C	Excavation unit C-1	A.D. 440 ± 80
z	OWU-61	Excavation unit C-1	A.D. 481 ± 65
Seip			
aa	UCLA-292	Mound 1 (Pricer)	A.D. 55 ± 100
bb	DIC-1725	Locality 20, Feature 2	A.D. 350 ± 45
cc	DIC-1724	Locality 20, Feature 4	A.D. 470 ± 55
dd	DAL-280	House 7, Feature 5	A.D. 90 ± 85
ee	DAL-116	Unit D, Midden Layer, Houses 1–3	A.D. 230 ± 80
ff	DIC-281	House 4, Feature 7	A.D. 590 ± 105
gg	DIC-289	Unit F, External post, House 4	A.D. 350 ± 60
hh	DAL-281	House 5, Feature 3	A.D. 590 ± 105
ii	DAL-282	House 6, Feature 13	A.D. 1055 ± 110

from two of the smaller mounds. In Russell Brown Mound 1, one or possibly two out of ten pit features contained dark soil and burned rock, while there were five out of seven pits with such fill in Mound 3. These soils may represent a change in type or in intensity of activities which were carried out in the earthwork area at this later time.

Considering the overall archaeological evidence, Prufer has placed the occupation of the McGraw site in the fifth century (Prufer et al. 1965:106). Accepting his interpretation of the site as a single cultural event, and using all the dates except that on bone, which was an experimental date (Prufer et al. 1965:104), we can compute a weighted mean for the site of A.D. 318 ± 32. This is well within the range of dates from the Liberty Complex and close to the estimate for the use of the main floor at Edwin Harness.

As is shown in Figure 10.2, the range of available dates from the Seip Earthworks overlaps that of Liberty. Unfortunately there are no series of dates from the same context within Seip, so relationships among the various parts of the complex are more difficult to evaluate. Two dates were not available when Figure 10.2 was prepared. The first date, A.D. 430 ± 70 (DIC-2471), was obtained from charcoal left from a small fire built on the surface of a plaza-like area in Seip Locality 23 (Greber and D. Griffin 1982) which is immediately west of the Ohio

Historical Society Houses 1–7 (Baby and Langlois 1979). While it was burning, this fire was apparently covered with pea gravels similar to those in Harness Feature 41. These gravels were the first of at least two covers over the entire plaza. A second date, A.D. 330 ± 40 (DIC-2473), has been obtained from the floor of the Seip Big House from charcoal mixed with the cremated bones in Shetrone and Greenman Burial 32. The assay on bone from this same feature is unfortunately unacceptable (A.D. 670 ± 55, DIC-2472). The A.D. 330 mean value (likely range A.D. 290 to A.D. 370) is relatively close to the dates from the floor of the Harness Big House. More dates are needed to corroborate the series.

Two dates, A.D. 470 ± 55 (DIC-1724) and A.D. 350 ± 45 (DIC-1725) have been obtained from charcoal found in a pit and in a midden-type deposit of burned rock, mica, colored clays, and other materials in Locality 20 which is just west of the earthwork wall extending south from the small circle (Greber and D. Griffin 1982). Sherds which have been identified as Connistee material (Bennie Keel, Chief Consulting Archaeologist, U.S. Dept. of Interior, personal communication 1980; Roy Dickens, University of North Carolina, Chapel Hill; and Jefferson Chapman, University of Tennessee, Knoxsville) were found in the general vicinity of the dated charcoal.

In the dates from the Ohio Historical Society units, the assays for Houses 4 and 5 do not follow the stratigraphy as reported by Baby and Langlois (1979). There does appear to be some time range in the use of the seven structures but it is not yet possible to associate specific events in various parts of the earthwork with each other. The time span of use does overlap with that of the Liberty Works; however, more dates, hopefully from a variety of absolute dating techniques, are needed. There is a growing data base of absolute dates which demonstrates, consistent with the archaeological evidence itself, that these earthworks are indeed complexes of sites. No single chronological date can be used to represent "Seip" or "Harness"; therefore, discussions of intersite relationships should specify the specific sites within the complex which are pertinent to the points being discussed.

Epilogue

The Harness Big House was a place full of symbols. We can identify at least some of these symbols; however, we may not be able to interpret their intended meaning. It is very tempting to interpret the data we have found using details from ethnographies of known Eastern North American peoples who are separated by more than a thousand years from Hopewell peoples. In such interpretations we are looking for elements which are basic parts of an Eastern Woodlands culture and which could have stability through time; that is, we are looking for a proto-culture as a linguist seeks a proto-language. Yet we wish this exercise to yield something that is not so general that it is uninformative. This search must be done with additional cautions, since, as is well documented, the meanings of a symbol vary not only through time, but within the same time and even within a given culture at a given time. What we can be confident of is the existence of a symbol and a class to which the symbol belongs. The recent salvage work at Edwin Harness has added to our knowledge of Hopewell symbols. The classes we have found include numbers, directions, colors, shapes, opposition or binary contrasts, special trees and plants, and special uses of fire or smoke. These symbols reflect a system of thought and a way of life. One can find examples of the meaning of each of these within historic Eastern Woodlands peoples in their range of activities: gathering, hunting, gardening, curing, giving birth, giving names, marrying, praying, trading, achieving great deeds, and dying. They are part of the oral traditions which explain the origins of the world and of important cultural elements (e.g., Callendar 1978; Swanton 1946).

Structural remains which have been found at the base of Hopewell mounds have at times been called "Charnel Houses." I would consider the use of such a name for the Big House inappropriate. It should not be assumed that all evidence of activities found in such contexts must be interpreted as funeral. Even within modern cultures there are examples of the juxtaposition or superposition of crypts and/or tombs with areas which are used for a variety of civic, ceremonial, and religious purposes, as colonial churches which have burials below the main floor or in adjacent yards. Describing only the funeral aspects can be misleading and then centrality of the Big House within the life of these Hopewell people is lost. We have not yet been fortunate enough to find the house of a family; at least we have not recognized any structure as such. I expect that such a house will lack much of the symbolic detail which can be found in a major civic-ceremonial center because it is the center which is the appropriate place to show and care for the symbolic life of a people.

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